National Library of Canada
Bibliothèque nationale du Canada

Canadian Theses Service
Service des thèses canadiennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

NL-339 (r. 88/04) c

Canada

UNIVERSITY OF ALBERTA

EATING ATTITUDES IN RELATION TO EATING DISORDERS AMONG HIGH PERFORMANCE ATHLETES

BY

DEXA C. STOUTJESDYK

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF EDUCATION

IN

COUNSELLING PSYCHOLOGY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

SPRING, 1990

National Library of Canada
Bibliothèque nationale du Canada

Canadian Theses Service
Service des thèses canadiennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

ISBN 0-315-60349-6

NL-339 (r. 86/04) c

Canada

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PSYCHIATRY • WEST FEE HALL EAST LANSING • MICHIGAN 48824-1316

January 31, 1990

Dexa Stoutjesdyk
#1503,8315,105 Street
Edmonton, Alberta
Canada T6E 4H4

Dear Mr. Stoutjesdyk:

I am writing to provide you with permission to use the Eating Attitudes Test in the appendix of your thesis. I have also forwarded information about how you can contact Psychological Assessment Resources to obtain permission to copy the EDI for your appendix. Psychological Assessment Resources holds the copyright for the EDI. You can write to them at the following address:

Dr. Bob Smith
President
Psychological Assessment Resources
P. O. Box 998
Odessa, FL 33556

The title of your thesis sounds very interesting, and I would be delighted if you could send a copy of the abstract or a summary of your findings. We are conducting a number of studies at MSU on high performance athletes, and your findings would be very helpful in our review of the literature.

Yours sincerely,

David M. Garner, Ph.D.
Professor

DMG/bjr

MSU is an Affirmative Action Equal Opportunity Institution

PAR Psychological Assessment Resources, Inc.

Mailing Address: P.O. Box 998/Odessa, Florida 33556
Street Address: 16204 N. Florida Ave./Lutz, Florida 33549

Telephone (813) 968-3003
Telefax (813) 968-2598

January 23, 1990

Dexa Stoutjesdyk
#1503 8315 105 Street
Edmonton, Alberta
CANADA T6E 4H4

Dear Ms. Stoutjesdyk:

In response to your recent request, permission is hereby granted to you to include a copy of the Eating Disorder Inventory in the appendix of your thesis on "Eating Disorders Among High Performance Athletes".

This Permission Agreement is subject to the following restrictions:

(1) Any and all material used will contain the following credit line:

"Adapted and reproduced by special permission of Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, Florida 33549, from The Eating Disorder Inventory, by Garner, Olmstead, Polivy, Copyright, 1984 by Psychological Assessment Resources, Inc. Further reproduction is prohibited without prior permission from PAR, Inc."

(2) None of the material may be sold, given away, or used for purposes other than those described above without written permission of PAR, Inc.

(3) Payment of a royalty/license fee will be waived.

(4) One copy of any of the material reproduced will be sent to the Publisher to indicate that the proper credit line has been used.

(5) One copy of your research results will be sent to the Publisher.

ONE COPY of this Permission Agreement should be signed and returned to me to indicate your agreement with the above restrictions. Please keep one copy for your records.

Sincerely,

R. BOB SMITH, III, Ph.D.
President

RBS/bm

ACCEPTED AND AGREED:

BY: D Stoutjesdyk
DEXA STOUTJESDYK

DATE: Feb 5, 1990

THE UNIVERSITY OF ALBERTA
RELEASE FORM

NAME OF AUTHOR: **DEXA C. STOUTJESDYK**

TITLE OF THESIS: **EATING ATTITUDES IN RELATION TO EATING DISORDERS AMONG HIGH PERFORMANCE ATHLETES**

DEGREE: **MASTER OF EDUCATION**

YEAR THIS DEGREE GRANTED: **1990**

Permission is hereby granted to the UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

D Stoutjesdyk

1503 - 8315 - 105 Street
Edmonton, Alberta
T6E 4H4

DATE: Feb 6, 1990

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled EATING ATTITUDES IN RELATION TO EATING DISORDERS AMONG HIGH PERFORMANCE ATHLETES submitted by DEXA C. STOUTJESDYK in partial fulfilment of the requirements for the degree of Master of Education in Counselling Psychology.

R. F Jevne

Dr. Ronna Jevne

Dr. Harvey Zingle

A. B. Nielsen

Dr. Brian Nielsen

Murray Smith

Dr. Murray Smith

DATE: February 5, 1990

DEDICATION

To my husband, Bill, whose unwavering support and encouragement were continually demonstrated through his actions as well as his words.

ABSTRACT

The purpose of this study was to examine whether athletes in certain sports display a higher tendency toward eating disorders than athletes in other sports. A total of 191 athletes (104 females, 87 males) from 26 different Universities and clubs were studied. The athletes were classified into three groups (i.e. sport classes) according to the type of sport they participated in; 1) activities that do not emphasize leanness (volleyball and heavyweight rowing) 2) activities that require athletes to weigh in before competition (lightweight rowing and judo) and 3) activities that emphasize leanness (gymnastics and diving). The Eating Attitudes Test (EAT), a questionnaire that is useful in identifying individuals who have the characteristic behaviours and attitudes found in anorexic patients, was administered. Male and female data were analysed independently. One way analysis of variances were done on the resulting test scores to check for differences between the groups of athletes.

Significant differences between sport classes were found for some of the female athletes groups. Athletes participating in activities that emphasize leanness and athletes in weight matched activities had higher EAT scores than athletes in non weight restricting activities. Although, overall, male athletes appeared to have a higher tendency towards eating disorders than the general population, no significant differences were found between the different sport classes for male athletes.

While causal conclusions could not be drawn, the study indicates that different groups of athletes may be at different risks for developing eating disorders. These data also suggest that the different focus and eating attitudes of athletes from different

sports may be correlated with the characteristics associated with the type of sport an athlete is involved in. Future research should aim to clarify the role of sports in the expression of an eating disorder in order to be useful in the prevention and treatment of this disease.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Eating Disorders in the Population	1
	Purpose of the Study	2
	Organization of the Report	4
II.	LITERATURE REVIEW	6
	PART I - Eating Disorders	6
	Anorexia Nervosa and Bulimia	6
	Prevalence	7
	Symptoms and Complications	9
	Etiology	10
	Treatment	13
	PART II - High Risk Groups	15
	Contributing Factors to High Risk	15
	Athletes	16
	Predisposition of Athletes Towards Eating Disorders	16
	Prevalence	20
	Etiology	24
	Summary	25
III.	RESEARCH AND DESIGN METHODOLOGY	26
	Introduction	26
	Sample	27
	Instruments	28
	Demographic Questionnaire	29
	Eating Attitudes Test	29
	Eating Disorder Inventory	30
	Data Collection	31
	Hypothesis	33
	Data Analysis	33

CHAPTER PAGE

Delimitations....34
Limitations....34

IV. RESULTS....36
Descriptives....36
EAT Scores and Gender....40
Female Athletes - EAT Scores
Within the Different Sports....40
Male Athletes - EAT Scores
Within the Different Sports....42
EAT Subscales....44
Competitiveness of Setting....45
Ancillary Findings....46

V. DISCUSSION AND CONCLUSIONS....47
Overview....47
Limitations....48
Athletes in General....48
Hypothesis 1....51
Hypothesis 2....52
Hypothesis 3....54
Achievement Pressure....54
Implications for the Future....55
Future Research....57

BIBLIOGRAPHY....59

APPENDICES....66

Appendix A....67

CHAPTER PAGE

Appendix B.....71

Appendix C.....81

LIST OF TABLES

TABLE **PAGE**

Table 1. (Study Sample by Sport and Gender).....28

Table 2. (Athletes with EAT Scores ≥ 30 by Sport and Gender).....37

Table 3. (Mean EAT Scores by Sport and Gender).....38

Table 4. (Mean EAT Scores from other Studies on College Populations).....39

Table 5. (t-Tests: Mean EAT Scores by Sports within Sport Classes (for female athletes)).....41

Table 6. (t-Test: Mean EAT Scores by Sports within Sport Classes (for male athletes)).....43

Table 7. (Mean EAT Subscale Scores for Different Sport Classes).....44

CHAPTER I

Introduction

Eating Disorders in the Population

Research in the area of eating disorders has significantly increased over the past decade. This expansion may be in part due to the seriousness and the rising incidence of these disorders (Crisp, Palmer and Kalucy, 1976). Eating disorders affect females in the order of 10:1 over males, (Diagnostic and Statistical Manual of Mental Disorders (DSM-III) American Psychiatric Association, 1980; Bruch, 1973) and can have crippling effects with a significant mortality from starvation or suicide (Bruch, 1977; Crisp et al, 1976). In Canada alone it is estimated that 5 % or 50 thousand young women between the age of 14 and 24 are currently suffering from an eating disorder. It is also estimated that another 2 million women may be at risk for developing serious abnormalities in eating patterns. (National Eating Disorder Information Centre, 1985).

Experts differ in their opinions regarding the features and etiology of eating disorders such as Anorexia Nervosa and Bulimia. The majority agree that body image distortion, absence of underlying physical illness and extreme weight loss (for Anorexia) or episodes of overeating (for Bulimia) are some of the main components involved. Many professionals also believe that a number of factors can contribute to the development of an eating disorder, ranging from individual factors to societal influences (Garner & Garfinkel,1980). However, universal consensus on clinical diagnosis, predispositional factors, treatment or outcome factors for either Anorexia or Bulimia has not been established.

Recent research indicates that the incidence of eating disorders is on the rise, particularly in certain groups within the general population. Dancers, models, and athletes have been identified as populations possibly at high risk for developing eating disorders. There are some indications that certain subgroups within these "high risk" populations are even more vulnerable than their counterparts. Factors such as high level of competition and leanness being linked to success have been cited as possible predisposing factors for developing eating disorders (Borgen & Corbin, 1987; Garner & Garfinkel, 1980). The extent to which these groups are affected is unclear. The etiology of the disorder within these groups is also yet to be determined. More research in this area is required to help identify potentially "at risk" individuals so that treatment can be initiated at a preventive stage rather than after the disease has developed. The "at risk" population being considered in this study is high performance athletes.

Purpose of the Study

An eating disorder is a serious disease that can become life threatening. Affected individuals find themselves caught in a paradoxical situation where they attempt to improve themselves through dysfunctional and self-destructive behavior. The fact that the incidence of eating disorders is on the rise has led concerned professionals in the health related field to search for and identify the etiological factors related to these disorders. This includes identifying who appears to be at risk and why. The research in the area of eating disorders and sports is just leaving the anecdotal stage. Many experts are divided as to whether or not athletes are a high risk group for developing eating disorders. Though much of the research in this area is conflicting, there does appear to be evidence that certain subgroups of athletes have a higher tendency towards eating disorders than others (Borgin &

Corbin, 1987; Combs, 1982; Henry, 1982; Rosen, McKeag, Hough & Curley, 1986; Yates, Leehay & Shisslak, 1983). It is important to establish if various factors related to certain sports are contributing to the progression of eating disorders. A knowledge of the relationship between eating attitudes and different groups of athletes could help coaches, parents, athletes, and other sports people in the prevention or early recognition and intervention of the disorder. Therefore, a first step is to determine whether various subgroups of athletes really do have more of a tendency towards developing eating disorders than others.

The purpose of this study is to identify whether athletes in certain sports display a higher tendency toward eating disorders than athletes in other sports. Specifically, the study examines whether athletes in sports that emphasize leanness differ from athletes in other sports with regard to eating attitudes. This study does not attempt to confirm or refute any intrapsychic theories or to examine the personality characteristics of athletes who have developed eating disorders.

Much of the past research to date has looked at athletes as a group without differentiating properly between different subgroups of athletes (Burckes-Miller & Black, 1988; Smith, 1980; Zucker, Avener, Bayder et al., 1985). Studies that have examined certain subgroups of athletes are still remiss in that they do not discriminate between athletes that experience an implicit demand to be lean and athletes that experience an explicit demand to be a specific weight, not for appearances sake but in order to be able to compete at a specific weight category. This study is an extension of Borgen and Corbin's (1987) and Rosen et al.'s (1986) studies which suggest that athletes in sports where there is an implicit and sometimes explicit demand for leanness, to enhance both performance and

appearance, have a higher incidence of eating disorders. As well as looking at athletes in sports that emphasize leanness, the current study also looks at athletes in sports that require specific weight requirements to be met before being allowed to compete. These athletes face different pressures and demands regarding their weight than athletes that focus on leanness for appearance sake.

This study examines the eating attitudes of;

- athletes in sports emphasizing leanness ie: sports in which there is an implicit and sometimes explicit demand for leanness to enhance both performance and appearance.
- athletes competing in weight matched sports, i.e.: sports in which there is an explicit demand for athletes to be at or below a specified weight but not an implicit demand for leanness for appearance sake.
- athletes in non weight restricting sports, i.e.: sports in which no weight restriction is in effect and appearance is not deemed essential to success.

These three groups of athletes were compared for significant differences in incidence of pathogenic eating attitudes in an attempt to identify the group(s) of athletes most at risk.

Organization of the Report

Following the introductory chapter, Chapter II contains the literature review which presents background information on eating disorders as well as on populations, such as athletes, considered to be at "high risk". Chapter III provides an outline of the research design and methodology that is used in this study. Data collection procedures are described, hypotheses stated, and methods of analysis are discussed. The sections on

delimitations and limitations address the generalizability of the study as well as what could not be done. Findings and results are presented in Chapter IV. Chapter V incorporates the discussion and summary of the findings and results of the research. Conclusions and implications for future research are also presented.

CHAPTER II

Literature Review

This overview of eating disorders discusses characteristics, prevalence rates in the general population, and high risk populations. Athletes are presented as a high risk population and research in this area is discussed in more depth. There are conflicting reports about the prevalence and etiology of eating disorders among athletes. Within this context the literature review provides verification of the need for further research on eating disorders among athletes.

PART I - Eating Disorders

Anorexia Nervosa and Bulimia

Two of the most common types of eating disorders are Anorexia Nervosa and Bulimia. Anorexia Nervosa is usually characterized by self induced weight loss of at least 25 per cent of original body weight through excessive dieting and/or exercise, refusal to maintain a body weight over a minimal normal weight for age and height, amenorrhea (in females), a morbid fear of becoming obese and a disturbance of body image. Bulimia is characterized by episodic binge eating, fear of not being able to control amounts eaten, episodes of overeating followed by self-induced vomiting or purging or both, and similar to anorexics, bulimics have a morbid fear of becoming obese (DSM-III) (American Psychiatric Association, 1980; Russell, 1979). Individuals with an eating disorder often misuse certain drugs in an attempt to promote weight loss, suppress their appetite or minimize the absorption of food. The most commonly used drugs include diet pills, diuretics, laxatives and the drug ipecac,

which is used to induce vomiting (Mitchell, Pomeroy & Huber, 1988; Muuss, 1985). Bulimia and Anorexia Nervosa share many symptoms and cannot always be treated as two distinct eating disorders, i.e. Anorexic patients also binge and purge but to a lesser extent than bulimics (Russell, 1979).

The specific classification of an eating disorder is unclear as there is presently no universally accepted set of diagnostic criteria. The DSM-III, Russell (1979, 1983) and Feighner (1972) are the more commonly used empirical criteria for diagnosing the "classical" syndrome of Anorexia Nervosa and/or Bulimia Nervosa (See Appendix A for DSM-III, Russell and Feighners' criteria). However, eating disorders are reported to occur on a continuum, with the "clinical" syndrome as the extreme point (Garner, Olmstead & Garfinkel, 1984; Nylander, 1971). Button and Whitehouse (1981) describe the term "subclinical anorexia nervosa" as those women who score high on eating disorder screening questionnaires, displaying abnormal preoccupation with weight and many, but not all, of the behavioral symptoms associated with clinical anorexia nervosa.

Prevalence

This nonuniformity of diagnostic criteria as well as other factors such as sociocultural influences, type of measurement instruments, and population studied, make it difficult to determine the incident rate of eating disorders among the general population. The majority of studies have been done with college and post secondary populations. British studies have shown that Anorexia Nervosa occurs from 1 out of 220 to 1 out of 100 college and school girls aged 16 years and over (Crisp et al., 1976; Whitehouse, Phil & Button, 1988). American studies report incidence rates of Anorexia Nervosa among college and secondary school females to be closer to 2.0% (Pope, Hudson, Yurgelun-Todd, 1984).

The incident rate among males is considerably less with no cases of Anorexia Nervosa being diagnosed in these cited studies. These prevalence rates reflect diagnoses made using strict DSM-III criteria for the classification of a clinical eating disorder. Button and Whitehouse (1981) found, based on scores from the Eating Attitudes Test (Garner & Garfinkel, 1979) and personal interviews, that approximately 5% of the women in their study could be classified as having a subclinical form of anorexia nervosa.

The prevalence of bulimia also has not yet been clearly established but it is purported to occur in 2.7% to 10.0% of female college students (Greenfeld, Quinlan, Harding, Glass & Bliss, 1987; Healy, Conroy & Walsh, 1985; Katzman, Wolchik & Braver, 1984; National Eating Disorder Centre, 1985; Nevo, 1985; Pope et al., 1983; Pyle, Halvorson, Neuman & Mitchell, 1986). A survey of the research on bulimia among college males suggests a prevalence rate of approximately 1.0% (Button & Whitehouse, 1981; Mitchell & Eckert, 1987; Pope et al., 1983; Pyle et al., 1986).

These estimates do not include subjects who were not diagnosed as having a "clinical" eating disorder but are considered to have eating disordered behavior and/or are extremely weight preoccupied. Extreme weight preoccupation is reflected by scores in the anorexic range on self report instruments such as the Eating Attitudes Test and/or the Eating Disorder Inventorys' Drive for Thinness subscale (Garner, Olmstead & Polivy, 1983). Overall, it is estimated that 6.0% to 13.0% of college aged women experience an eating disturbance and/or are significantly weight preoccupied (Button & Whitehouse, 1981; Garner & Garfinkel, 1979; Raciti & Norcross, 1987; Williams, Schaefer, Shisslak, Gronwaldt & Comerci, 1986). Men are affected to a much lesser degree with most estimates ranging from 0% to less than 1.0% (Button & Whitehouse, 1981; Greenfeld et al., 1987; Healy et al., 1985; Mitchell & Eckert, 1987; Pope et al., 1984; Pyle et al., 1986).

Symptoms and Complicatons

Eating disorders are life threatening diseases with a mortality between 5 and 20% (Kalucy, Crisp, Lacey & Harding, 1977; Moriarty & Moriarty, 1986). Death is usually a result of the combined effects of starvation, dehydration and hypokaliaemia or else suicide (Bruch, 1977; Crisp et al., 1976; Kalucy et al., 1977; Russell, 1979). Physical complications, due to the misuse of certain drugs, are common. Constipation, carthartic colon, bleeding and pancreatic dysfunction are some of the complications related to laxative abuse. Excessive use of diuretics can lead to potassium depletion, dehydration, cardiac conduction defects and arrhythmias. Some bulimics as well as some anorexic women use ipecac syrup as a means to induce vomiting. This over the counter drug has been linked to the development of myopathies including fatal cardiomyopathy (Kaplan & Woodside, 1987; Mitchell et al., 1988). Excessive weight loss results in numerous medical conditions such as bradycardia (slowness of heartbeat), hypotension (loss of normal blood pressure), hypothermia and cardiac arrest. Metabolic changes such as either hyperactivity or lethargy also occur. Usually the metabolic rate slows down in an effort to conserve energy. Endocrine disorders and extreme loss of body fat can result in amenorrhea, loss of libido and, in extreme cases, infertility (Kaplan & Woodside, 1987; Muuss, 1985).

Many of these symptoms are related to a starvation state. Studies on chronic starvation, such as Keys, Brozek, Henschel, Michelsen and Taylors' (1950) study (cited in Kaplan & Woodside, 1987) on the effects of semistarvation on a group of male volunteers, demonstrate that subjects in a starvation state experience most of the physical signs and symptoms of anorexia nervosa. As well, there are cognitive, behavioral and personality effects of starvation that are also seen in people with eating disorders. These effects are not felt to be pathognomonic to anorexia nervosa or bulimia but are secondary to

starvation. With starvation comes distinct pathological changes in mental state. According to Keys et al., premorbid personality traits, such as obsessiveness, compulsivity, hypochondriasis and indecisiveness, are exaggerated. Concentration and alertness are affected as well as mood, as subjects become very irritable and experience wide mood swings. An obsession with food, including the hoarding of food and nonfood items, has also been observed in both "starved" individuals and anorexic or bulimic indviduals (Kaplan & Woodside, 1987; Muuss, 1985). Extreme cases of anorexia nervosa and bulimia result in chronic starvation. The personality changes accompanying starvation can often take on the symptoms of other serious psychiatric illnesses, such as; affective, obsessive, compulsive, and even psychotic disorders. These symptoms can act to perpetuate an eating disorder and are usually resistant to psychodynamic therapies. Therefore it is necessary to get the patient out of "starvation mode" by refeeding before any psychological treatment will be effective (Bruch, 1981; Kaplan & Woodside, 1987).

Etiology

There is no clear answer as to why some people develop eating disorders and others do not. Both anorexia nervosa and bulimia are multifarious disorders with individual, family and possibly cultural predisposing factors (Garner & Garfinkel, 1980). Though extensive research is lacking on males it is generally accepted that over 90% of those affected by eating disorders are women (Crisp et al., 1976; National Eating Disorder Centre, 1985). It is felt that males are not as concerned with their body image as females. Concern expressed by males seem to be more with being bigger and stronger which is consistant with the western world's concept of the ideal male. Young women today are being bombarded by the

media, magazines and television with what represents the "ideal" woman. The image portrayed is one of being sleek and ultra slim: "Thin is in". This relatively recent cultural expectation for thinness has been intensified by the fitness rage that has taken hold in North America in the past decade. These differences in attitudes and cultural expectations may make the male less susceptible to developing an eating disorder (Healy et al., 1985; Kalucy et al., 1977; Leichner, Arnett, Rallo, Srikameswaran & Vulcano, 1986).

Although women with eating disorders are a heterogenous group, one characteristic many of them appear to share is a lack of identity awareness (Basseches & Karp, 1984; Scott & Baroffio, 1986; Strober, 1981; Weinreich, Doherty & Harris, 1985). This identity confusion is tied to a diminished capacity for autonomous functioning which in turn leads to an extreme sense of ineffectiveness. To combat this overwhelming sense of ineffectiveness many women with eating disorders develop a high need for control. They are rigid and inflexible in their behavior and attempt to gain a sense of control by controlling their bodies (McLaughlin, Karp & Herzog, 1985; Strauss & Ryan, 1987; Woods & Heretick, 1983). This appears to be particularly true of anorexics although bulimics also display a need for control but seem more prone to impulsive behaviors (Garfinkel, 1981; McLaughlin et al., 1985; Weisberg, Norman & Herzog, 1987).

Other personality characteristics that have frequently been observed in anorexics are; conformity - many anorexics are fearful of change, whether negative or positive, hyperactivity - either by exercise or long hours of studying/working, negative attitudes towards sex and their own sexuality, and a high level of denial about having a problem (Bruch, 1973, 1981; Leon, Lucas, Colligan, Ferdinande & Kamp, 1985; McLaughlin et al., 1985; Muuss, 1985; Strober, 1980, 1981). Bulimics share some of these characteristics but studies indicate that they differ from anorexics in terms of greater emotional lability,

anger, negativity and depression (Weinstein, Gordon, Hill, Hoskins, & Salerno, 1985; Weisberg et al., 1987). Women with eating disorders, especially anorexia nervosa, are often described as model children; dependable, perfectionistic, people pleasers with an intense desire to be successful (Bruch, 1973, 1981; Crisp, Hsu, Harding & Hartshorn, 1980; Muuss, 1985; Pumariega & LaBarbera, 1986; Strober, 1980). It has also been noted that beneath this "ideal" child image exists many underlying insecurities and a fear of not being respected and admired by others (Muuss, 1985). Bruch (1981) has observed that families of anorexics appear, on the surface, to be stable and normal, with the parents stressing the happiness of their home. However, upon closer examination, marital discord or disillusionment were often found to be present. Many families of anorexics were found to be overprotective, rigid, and poor problem solvers. They tended to value conflict avoidance rather than discussing their problems (Bruch, 1981; Crisp et al., 1980; Muuss, 1985; Strauss & Ryan, 1987). Members of the family also tended to be over involved with each other yet had poorer communications and were found to be less accepting of striving for independence when compared to control group families (Crisp et al., 1980; Leon et al., 1985; Strauss & Ryan, 1987).

Other hypotheses surrounding the causation of Anorexia Nervosa and other eating disorders include biological and psychosexual theories (Bruch, 1973; Orbach, 1978; Weiner, 1983). Weiner has suggested that disturbances in hypothalimic function are linked with anorexia. However, it is unclear as to whether the malfunctioning hypothalamus is the cause of anorexia or merely a result of extreme starvation. Bruch and Orbach have argued that eating disorders can be linked to a womans' lack of acceptance of her own feminine sexuality. An eating disorder is considered a means by which women resist sexual maturity and in turn avoid sexual intimacy.

Treatment

Just as there is no clear consensus about the causes of eating disorders, neither is there agreement about their treatment. The prognosis of disorders such as anorexia nervosa and bulimia vary according to factors such as age of onset, length and severity of the illness. While physical or psychological interventions may be administered exclusively from one another, many experts feel that a multifaceted approach is most effective (Garner & Garfinkel, 1980; Hsu, 1986; National Eating Disorder Centre, 1989). One physical intervention is weight restoration, which in extreme cases can involve hospitalization and intravenous feeding. Drug therapy has also been used as a methods of weight restoration and/or to alleviate psychological symptoms such as depression or anxiety. There is no medication that cures anorexia nervosa but it can play a supportive role in the treatment process. Drugs such as domperidone are used to increase the emptying rate of the stomach which alleviates complaints about bloating and allows the patient to eat more (National Eating Disorder Centre, 1989). A study of the effectiveness of drug and behavior modification treatments on anorexia nervosa patients found that both treatments had positive effects on a number of negative attitudes characteristic of anorexia nervosa (Goldberg, Halmi, Eckert, Casper, Davis & Roper, 1980). Goldberg et al. found that cyproheptadine, a drug used to increase body weight, improved attitudes such as the fear of becoming fat, heterosexual disinterest and obsession with cooking. Anti-anxiety medications such as lorazepam or oxazepam are sometimes used to reduce pre-meal anxiety.

Anti-depressants have also been useful with anorexics that display symptoms of depression even after their weight has been restored within a range that eliminates the complicating factors of starvation (National Eating Disorder Centre, 1989). Drug treatment for Bulimia has been even more promising. Anti-depressant drugs such as desipramine and

fluoxetine have been found to be helpful when used in conjunction with some type of psychotherapy (National Eating Disorder Centre, 1989). After two or three weeks of medication patients report decreased urges to binge on food which subsequently leads to a reduction in vomiting frequency and secondary feelings of shame and secrecy. The downside to drug treatment involves various side effects which may be minimal for some people but significant for others.

Eating disorders require a comprehensive treatment approach. Therefore drug treatment should be combined with some form of psychotherapy to ensure that both the physical and psychological issues are addressed (Hsu, 1986). Cognitive and behavior modification therapy are two of the more common approaches used to treat anorexia and bulimia (Garner, 1986; Garner & Bemis, 1982; Hsu, 1986; Muuss, 1985; National Eating Disorder Centre, 1989). Family therapy is often advocated when the patient is younger (i.e.less than 16 years old) and/or the family is accessible (Dare, 1985; Muuss, 1985). Individual therapy may involve addressing such issues as low self-esteem and/or autonomy (Baird & Sights, 1986). Hypnosis and strategic interventions are additional methods that have been successfully used in the treatment of anorexia nervosa (Thakur & Thakur, 1989; Yapko, 1986). Maine's (1985) study of 25 recovered anorexics revealed that an existential, systems-oriented approach to treatment was useful. In summary, the treatment of eating disorders is often multimodal requiring numerous and varied interventions depending on what the needs and circumstances of the patient are.

Part II - High Risk Groups

Contributing Factors to High Risk

There is an overrepresentation of the disorder in females between 16 to 25 years of age, in the middle to upper social classes (Bruch, 1973; Crisp et al., 1976), which suggests that sociocultural influences may be an important factor in the development of an eating disorder. The fact that being thin is often associated with being rich is reflected by the adage "you can never be too rich or too thin". Female adolescents are vulnerable to the suppostion that to be successful in life (i.e. rich and famous) one must be beautiful and thin. This belief is perpetuated by the standards of ideal beauty set by the fashion industry and society in general. A study done by Garner, Garfinkel, Swhwartz and Thompson (1980) documents the shift toward a thinner ideal shape for females in Western culture. Their study of Playboy centerfolds and Miss America Pagent contestants over a period of twenty years indicate a significant trend towards slimness. Garner et al. also documented an increase in the number of "diet articles" in six popular women's magazines throughout these same two decades while, due to better nutrition and increasing heights, the weight norms for young women have correspondingly increased over this period. As a result the average female in Western society is faced with extreme pressure to meet an ideal standard of thinness which deviates significantly from the population and biological norms. This pressure to be unnaturally slim may be putting adolescent, middle to upper social class, females at risk for developing an eating disorder

Individuals, such as dancers and models, who experience greater than average pressure to focus on a slim body shape are thought to be at even higher risk for anorexia nervosa. Garner and Garfinkel (1980) support the hypothesis that individuals who experience increased pressure to focus on a slim body shape are at higher risk for anorexia nervosa.

Their examination of a group of professional dance students and fashion models for anorexia nervosa revealed a prevalence of 7% in these groups. This is significantly higher that the previously reported incidence of 1% in the general population (Crisp et al., 1976). Szmukler, Eisler, Gillies and Haywards' (1985) study found a similar prevalence rate as Garner and Garfinkel in a younger group of ballet students. Garner and Garfinkel also provided evidence that the pressure to be slim is compounded by competitiveness or intense performance expectations. It is not suprising therefore, that another population thought to be "at risk" is athletes. (Borgen & Corbin, 1987; Rosen et al., 1986; Smith, 1980; Zucker et al., 1985).

Athletes

Predisposition of Athletes Towards Eating Disorders

The relationship between anorexia and excessive exercise is well documented. (Bruch, 1973; Epling & Pierce, 1984; Richert & Hummers, 1986; Wheeler, 1986; Zucker et al., 1985). Approximately 25 percent of female anorexics are heavily involved in athletics (Bruch, 1973; Kalucy et al., 1977) Some researchers feel that anorexia may be an activity induced disorder. Epling and Pierce (1984), using rats, demonstrated that increased and extensive exercise resulted in restricted food intake which in turn appeared to be a trigger for further increases in motor activity. Studies have shown a positive correlation between amount of exercise and subjects displaying tendencies toward eating disorders(Crisp, et al., 1980; Richert & Hummer, 1986). Richard and Hummers (1986) looked at the relationship between exercise patterns and possible risk for eating disorders among college students. Results of the study showed a significant positive correlation between reported hours of jogging per week and total scores on the Eating Attitudes Test (EAT) (Garner & Garfinkel, 1979); a screening instrument for eating disorders.

Athletes share many characteristics that have been found in anorexia patients. McSherry (cited in Slavin, 1987) has presented shared and distinguishing features of anorexics and athletic females. Some of the similarities found include dietary faddism, controlled calorie consumption, specific carbohydrate avoidance, low body weight, resting bradycardia and hypotension, increased physical activity and amenorrhea. Athletes are thought to be different from anorexics in that they are involved in purposeful training, have good muscular development, maintain accurate body image and have body fat levels within the normal range. Anorexics, on the other hand, partake of aimless physical activity, have poor muscular development, distorted body image,(i.e. overestimating their body size), below normal body fat level and an intolerance to the cold.

Yates, Leehey and Shisslak (1983) compared a subgroup of male athletes, whom they designated as "obligatory" runners, with the characteristics, style and background of the "typical" anorexic woman as described in the literature. Although details of their methodology are unclear, they found that obligatory runners resembled anorexic women in terms of family background, socioeconomic class and such personality characteristics as difficulty expressing anger, very high achievers, tolerance of physical discomfort, denial of potentially serious debility and a tendency toward depression. Yates et al. offer the speculation that both obligatory runners and anorexic women may be involved in an attempt to establish an identity and reach perfection; the runner is considered an elite athlete whereas the anorexic woman gets recognition as an elite "dieter". Yates et al. appear to suggest that anorexia and obligatory running stem from a common psychopathology. However, this study has been criticized (Blumenthal Rose & Chang, 1985) for methodological ambiguities, lack of objective personality measures, subject bias and lack of a comparative group of anorexics.

Many experts feel that the world of high performance sports is a likely arena for the development of eating disorders. Leichner (1986) describes personality traits that are commonly found in individuals with eating disorders that are of particular relevance to athletes. He draws a parallel between athletes and individuals with eating disorders on such traits as high self expectations, rigid and obsessional approach to reaching goals, perfectionistic, and high emphasis on emotional control. Athletes are required to invest an extreme amount of physical exertion and time into their sports which in turn results in isolation and high levels of self-deprivation, characteristics often associated with eating disorders (Moriaty & Moriaty, 1986).

Most athletes are also under intense pressure to be slim and perform, which have been linked to the expression of eating disorders (Garner & Garfinkel, 1980). Athletes and coaches are well aware of the importance of a low fat to muscle ratio for maximum performances. The average high school girl's proportion of body weight made up of fat is 20 to 21%. Girls participating in highly competitive sports such as gymnastics, diving or long distance running are urged to have a body fat level of less than 10% (Smith, 1980). This demand for optimal leanness for better athletic performance and the unrealistic cultural expectations to be thin combine to create strong pressures on many young athletes to reject and minimize body fatness. This negative attitude towards fatness is perpetuated by reinforcement commonly received from coaches, teammates and parents. Athletes are often introduced to pathogenic methods of weight control such as purging and self induced vomiting by well meaning but unknowledgable teammates and coaches (Combs, 1982; Henry, 1982; Rosen et al., 1986; Zucker et al., 1985).

A common characteristic among athletes who diet excessively is a fear of failure which has also been linked to eating disorders (Boe, 1985). Boe found, through interviews with athletes who were involved in extensive dieting, that the athletes appeared to respond to stress and food deprivation in much the same way as bulimics did. These athletes also reported receiving a lot of positive reinforcement and support for their dieting behaviour from other dieting teammates. In the extreme case the athlete mistakenly starts to see losing weight as a means to reinforcement, success, perfection, and control rather than as a functional step toward improved performance (Geraty, 1983).

It becomes clear how the pressure to be slim and perform, coupled with most athletes' intense desire for success and instant gratification, as well as a lack of proper nutritional education, may lead to the formation of improper and bizarre dieting habits. This unhealthy and often extreme dieting behaviour can easily go too far as the athlete fights to meet the low weight requirements and high expectations demanded of her/him by any means at her/his disposal.

There is research that argues against the existence of a higher incidence of eating disorders or anorexic like psychopathology among athletes as compared to the general population (Lindeboe & Slettebo, 1984; Blumenthal, O'Toole & Chang, 1984). Blumenthal et al., using the Minnesota Multiple personality Inventory (MMPI), failed to find evidence to support the contention made from Yates et al.'s (1983) study that anorexics and obligatory runners may have basic similarities in personality attributes or share a form of psychopathology. Another study done on a group of runners and non runners provided some evidence of a distortion of body image among the high mileage runners; however, the runners were otherwise not found to display any clear abnormalities characteristic of people with anorexia nervosa (Wheeler, Wall, Belcastro, Conger & Cumming, 1986). Some experts feel that

there are differences between athletes that display eating disordered behavior and eating disordered women in general. Athletes are thought to exercise to lose weight in order to improve their performance while anorexics exercise to burn calories and become thin. Another difference thought to exist is that athletes do not have a morbid fear of being fat, which is characteristic of anorexics (Leichner, 1986). However, the majority of research indicates that some subgroups of athletes are at higher risk. Athletes participating in activities that emphasize leanness for the sake of better performance and appearance, as in gymnastics, long distance running, and diving are more prone to develop eating disorders than athletes in non weight restricting sports (Borgen & Corbin, 1987; Combs, 1982; Henry, 1982; Rosen et al., 1986; Yates et al., 1983).

Prevalence

Several studies have looked at the prevalence of abnormal eating patterns among athletes in various sports. Borgen and Corbin (1987) analyzed the responses to the Eating Disorder Inventory completed by 168 college women. The women were categorized into three groups - nonathletes (N = 101), athletes whose sports emphasize leanness; ballet dancers, body builders, cheerleaders (N = 35) and athletes whose sports do not emphasize leanness; swimmers, track and field and volleyball, (N = 32). The results showed that 6% of the nonathletes, and 20% of the athletes in sports that emphasize leanness were either exceptionally pre-occupied with weight or had tendencies toward eating disorders. Interestingly, none of the athletes in the group not emphasizing leanness displayed exceptional preoccupation with weight or tendencies toward eating disorders. Rosen et al. (1986) found that in a sample of 182 female college athletes, 32% practiced at least one pathogenic method of weight control. Overall athletes competing in sports that emphasized leanness had the highest incidence of pathogenic weight control behaviour which agrees with

Corbin and Borgen's findings. However, in contrast to Corbin and Borgen, Rosen et al. found potentially dangerous weight control techniques being used by a high percentage of athletes in sports where extreme thinness is not the typical physique of the participants. A control group of nonathletes was not used in this study. Therefore, it is unknown how these results compare to a population of similar age and sex. All the athletes who demonstrated signs of using pathogenic weight-control methods were reported to admit to having a fear of losing control over their eating habits and weight. A follow-up survey of 30 of the athletes from the original study revealed that, for most of the athletes, their concern about weight was related to athletic performance rather than improving their appearance. They did not believe or were unaware of the physical dangers that were associated with using pathogenic methods of weight control.

Drummer, Rosen, Heusner, Roberts and Counsilman's (1987) study of a group of younger competitive swimmers (9-18 years old) found that the primary reason for wanting to lose weight was related more to appearance than to performance. Specifically they uncovered that girls were more motivated to lose weight to look better while boys were more often motivated by improvement of their performance. Drummer et al. conclude that eating problems among athletes is more related to sociocultural factors that emphasize the merits of thinness for women rather than pressure from the sport itself to improve performance. Again a control group of nonathletes was not used therefore conclusions cannot be drawn as to how these young swimmers compare with young people uninvolved in sports.

In an informal study, the EAT questionnaire was distributed among 112 female sprinters and distance runners at an American Ivy League Track and Field Championship (Henry, 1982). Henry found that the sprinters scored, on the average, well within the normal range of behavior. Among the distance runners however there were distinct

differences in average scores between women who trained less than 45 miles per week and high mileage athletes (i.e. runners who trained in excess of 45 miles per week). The high mileage runners, on the average, scored twice as high on the EAT as the lower mileage runners. These high mileage runners scored at or above the 30 point cutoff which brought them into what is considered the anorexic range.

Burckes-Miller and Black (1988) found the prevalency of eating disorders among college athletes was higher than that reported for college and non college populations. The researchers used the "Eating Habits of Athletes" (EHA) questionnaire, developed specifically for the study based upon medical criteria from the DSM III. Responses from 695 male and female athletes from 22 midwestern colleges were analyzed. The data revealed that 4.2% of the female and 1.6% of the male athletes met the criteria for anorexia nervosa. 39.2% of the female and 14.3% of the male athletes were found to meet the criteria for bulimia . These incidence rates are higher than what has been reported for college and general populations. Guthrie (1986) used the Binge Eating Questionnaire-BEQ (Pope, Hudson & Yurgelun-Todd, 1983) as part of a survey study on 384 intercollegiate athletes (226 males and 158 females). The BEQ classified 8% of the athletes as having bulimia (13% of the female sample; 5% of the male sample). Of the athletes who identified themselves as having, or having had, an eating disorder; 72% felt that their athletic participation was a precipitating factor in the development of their eating problems. The study did not support extensive eating pathology among intercollegiate athletes but it did provide some evidence of the existance of eating disorders, as well as certain sports that may be more at risk than others. Guthrie noted that the athletes displaying abnormal eating patterns were primarily from sports that emphasize leanness due to aesthetic or weight requirements.

Some experts feel that, unlike the general population, both male and female athletes are at equal risk for developing eating disorders (Smith, 1980; Zucker et al., 1985). The majority of past research has focused on female athletes but the studies done with males do not support this view. Males in sport tended to worry about being underweight while female athletes worried more often about being overweight (Drummer et al., 1987). Drummer et al. also found that the male athletes in their study were less likely than female athletes to use pathogenic methods of weight control and were not subjected to society's standards of thinness that is demanded of females. The prevalence of eating disorders among female athletes is significantly higher than for male athletes however the difference is not as great as in the general population (Buickel, 1983; Dummer et al., 1987; Guthrie, 1986). As cited previously, 1.6% of the male athletes in one study met the criteria for anorexia nervosa (Burckes-Miller and Black, 1988) as compared to 0.1% in the general population (DSM III) (American Psychiatric Association, 1980; Crisp et al., 1976). Guthrie (1986) found cases of bulimia in 5% of the male athletes in her sample. This is substantially higher than the 1.0% incident rate generally reported for bulimia in the male college population (Button & Whitehouse, 1981; Mitchell & Eckert, 1987; Pope et al., 1983; Pyle et al., 1983). The evidence suggests that male athletes are affected by eating disorders and more research is needed to determine to what extent.

In conclusion there appears to be conflicting evidence on the issue of athletes being considered a "high risk" population for developing eating disorders. Research in this area, especially on male athletes, is just leaving the anecdotal stage towards controlled investigations. Some studies do not support the contention that the prevalence of eating disorders is higher among athletes than in the general or college populations. However a more consistent finding among these and other studies is that some subgroups of athletes

may be more at risk than others. Activities such as gymnastics, diving, and ballet dancing require low aerobic output thereby making it very difficult to maintain the low body weight and sylph-like image that appears to be linked to success in these sports. In sports that have weight classes, athletes are faced with strict weight requirements before even being allowed to compete. As a result these athletes may be under even greater pressure than other athletes from non weight restricting sports to focus on a slim body. Another factor that appears to put certain subgroups of athletes at risk for developing eating disorders is the level of competition at which the athlete is performing. A higher level of competition has been related to a higher incidence of anorexia nervosa with the more elite athletes exhibiting the physical and psychological features of anorexia nervosa (Hamilton, Brooks-Gunn, Warren, & Hamilton, 1986; Weight & Noakes, 1986).

Etiology

Experts' opinions are split on the reasons for eating disorders among athletes. One school of thought contends that individuals with a predisposition toward eating disorders are attracted to certain "thin" types of sports. (Henry, 1982; Zucker et al., 1985). Sports such as long-distance running, gymnastics or figure skating provide a socially accepted environment for individuals with anorexic tendencies to indulge their obsessions (Henry, 1982; Combs, 1982). These "predisposed" athletes have deep emotional problems that require extensive, long term intervention and treatment (Combs, 1982). Other research suggests that it is the pressure and demands of competitive sport that precipitate the onset of eating disorders (Garner et al., 1980; Rosen et al., 1986; Borgen & Corbin, 1987). Concern about weight was primarily related to athletic performance rather that appearances (Rosen et al. 1986). Smith (1980) feels that prognosis for these athletes is very good. His experience

has been that the emotional stresses that may have triggered various eating problems are not deep-seated chronic problems but are usually superficial, short-term concerns that respond well to counselling. A third view is that eating disorders are prevalent in sports because the type of people involved and the stresses of elite competition combine to perpetuate the disease. Any or all of these explanations seem plausible.

Summary

Insufficient research has been done in this area to conclusively determine the risks athletes face in relation to eating disorders. Much of the research to date is plagued by a lack of uniformity regarding: 1. the diagnostic criteria used for eating disorders, 2. the instruments used to measure or detect symptoms and characteristics of eating disorders, 3. the different sports being studied, and 4. lack of control groups. There do, however, seem to be indications that certain groups of athletes are more at risk than others. Whether it is the type of individual attracted to certain kinds of sports or the demand and expectations of the sport, or a combination of both that causes eating disorders in sports is also yet to be determined.

CHAPTER III

Research Design and Methodology

Introduction

This study is a modified replication of the causal-comparative study done by Borgin and Corbin (1987) on eating disorders among female athletes. In this study only athletes were looked at, replacing Borgin and Corbin's group of nonathletes with a category of athletes that are required to weigh in before being able to compete. Also, both male and female athletes were looked at as opposed to just females.

The overall purpose of this study was to examine the eating attitudes of high performance athletes in various types of sports. Specifically, the purpose of this study was to identify whether athletes in certain sports display a higher tendency towards eating disorders than athletes in other sports. The study was conducted on a population of post - secondary level athletes participating in the sports of gymnastics, diving, lightweight rowing, judo, volleyball and heavyweight rowing. The athletes were grouped according to the type of sport they participate in (female and male athletes were treated as independent samples):

1) activities that emphasize leanness (gymnastics and diving)
2) activities that require athletes to weigh in before competition (lightweight rowing and judo)
3) activities that do not require weight restrictions or emphasize leanness (volleyball and heavyweight rowing)

The Eating Attitudes Test (EAT) (Garner and Garfinkel;1979) was administered to the athletes by their respective coaches and trainers. Using the total EAT scores a one way anova was run to test for differences in eating attitudes between the different groups of sports.

Sample

Subjects were selected from universities and sport clubs across Canada. Samples were mainly drawn from 14 universities and approximately 12 clubs throughout Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. The sports that samples were drawn from were lightweight and heavyweight rowing, judo, gymnastics, diving, and volleyball. Both female and male athletes were solicited. Of the 693 questionnaires sent out to athletes 277 were filled out and returned (145 females, 132 males). This gave a return rate of 40%. Only "high performance" college and university athletes were to be included in the study. "High performance" is defined as athletes that train a minimum of 11 hours per week and have competed at provincial, national and/or international levels. This definition was substantiated by an informal survey, done by the author, of national level coaches and athletes from several different sports. Of the 277 athletes, 85 did not fit the above stated criteria, leaving 192 subjects in the sample (105 females, 87 males). One questionnaire was incomplete. Therefore the final analysis was based upon the responses from 191 athletes(104 females, 87 males). The ages of the subjects in the final study sample ranged from a 17-20 year old range to 29 years of age or over, with a modal range of 17-20 years old. Table 1 shows the distribution of the sample by sport and gender.

The athletes were categorized into three groups: 1. (WM), those whose activities require athletes to weigh in before competition (lightweight rowing and judo) N = 54 (32 females, 22 males), 2. (L), those whose activities emphasize leanness (gymnastics and diving) N = 46 (26 females, 20 males), and 3. (NW) those whose activities do not emphasize leanness (volleyball and heavyweight rowing) N = 91 (46 females, 45 males).

Activities emphasizing leanness were defined as those in which appearance is considered highly important to success. Activities not emphasizing leanness were those in which appearance is deemed less essential to success (Borgen & Corbin, 1987).

Table 1

Study Sample by Sport and Gender

Sport	n	Gender	
		Female	Male
Lightweight Rowing	35	22	13
Judo	19	10	9
Gymnastics	28	17	11
Diving	18	9	9
Volleyball	50	28	22
Heavyweight Rowing	41	18	23
Total	191	104	87

Instruments

An eight page packet (Appendix B) was given to each participant in the study. Each packet consisted of three sections :

A. Demographic Questionnaire

B. Eating Attitudes Test (EAT)

C. Eating Disorder Inventory (EDI)

Demographic Questionnaire

The demographic questionnaire was created to obtain information regarding the athlete's sex, club affiliation, age, occupation, sport, hours of training per week, years and level of experience in their respective sports. The information obtained from this demographic questionnaire was used to identify which subjects met the criteria of being "high performance", college or university athletes.

Eating Attitudes Test

The Eating Attitudes Test (EAT) (Garner & Garfinkel; 1979) was used to assess eating attitudes. The EAT is a 40 item self report measure used to screen for actual or incipient cases of anorexia nervosa in populations at high risk for the disorder. It has been used frequently in the research of eating disorders and has been reported as valuable in the identification of symptomatic behaviors and attitudes found in anorexia nervosa. (Garner & Garfinkel, 1980; Pumariega and LaBarbera, 1986). The EAT is a 6-point likert scale with responses ranging from always to never. An extreme response in the "anorexic" direction is scored as 3 points while the adjacent alternatives are weighted as 2 points and 1 point respectively. No score is given for "non-anorexic" answers. A cutoff score of 30 or more is proposed by the EATs' authors to determine potential eating disordered subjects. The test takes approximately 10 minutes to complete and is easily administered and scored.

The EAT is considered to have sound psychometric properties. Correlation of total test scores with clinical diagnosis of Anorexics and Normals resulted in an overall concurrent validity of $r = .87$, ($p < .001$). Therefore the authors feel that the EAT is a good predictor of group membership. The EAT was also able to discriminate and predict group membership when tested on five criterion groups (anorexics, normal females, normal males, obese females and recovered anorexics). There is some overlap in EAT scores between anorexic and normal control groups, therefore the 30 point cut-off score is recommended in

order to eliminate "false negatives" for anorexia and to allow a "false positive" rate of normal subjects with eating concerns comparable to those in the anorexic group.

The EAT shows insignificant correlations with other measures such as the Restraint Scale, weight fluctuations, and the extraversion and neuroticism scales on the Eysenck Personality Inventory. This indicates that the EAT measures specific symptoms that are more commonly found in an anorexic population than others (Garner & Garfinkel, 1979). Reliability, as a measure of internal consistency, is $r = .79$ for anorexic subjects and $r = 0.94$ for a pooled sample of anorexics and normal controls. This demonstrates a high degree of internal consistency given the relatively small number of items involved.

Garner, Olmstead, Bohr & Garfinkel (1982) performed a factor analysis on the 40 items on the EAT for a sample of 160 anorexia nervosa patients. They ended up with three factors that accounted for 40.2% of the total variance. Factor I was labelled "Dieting" and related to items that reflected a pathological avoidance of fattening food and a preoccupation with being thinner. Factor II, called "Bulimia and food preoccupation", consisted of items that dealt with thoughts about food as well as bulimia. The third factor, "Oral control", loaded on items that demonstrated self-control surrounding eating and perceived social pressure to gain weight. The authors suggest that the results from this factor analysis of the EAT should be viewed with caution since it is preferred that the number of subjects be 10 times the number of items included in the analysis when performing this kind of analysis. However, the authors feel that it is indicated that the EAT may be divided into three distinct factors or subscales.

Eating Disorder Inventory

The Eating Disorder Inventory (EDI) (Garner, Olmstead & Polivy, 1983) is a 64 item, self-report measure, consisting of eight subscales, designed for the assessment of

psychological and behavioral traits common in anorexia nervosa and bulimia. Four of the subscales measure attitudinal and behavioral components while the other four subscales deal with psychological traits characteristic of eating disorders. The EDI takes approximately ten minutes to complete. This questionnaire was included in the packet in order to collect data for another research project. The results from this questionnaire were not included in the present study.

Data Collection

Initial solicitation of participation was done through a letter of introduction to the athletic directors and coaches of the various universities and sport clubs in February of 1989. This letter was then followed by telephone contact to the coaches and trainers of each sport to be studied. The coaches and trainers who agreed to participate in the study were asked to identify and estimate the number of athletes they had that would meet the criteria for the sample (i.e. high performance, college or university athletes). In total 693 packets containing an introductory letter, one page of demographic questions and two questionnaires (information on the second questionnaire is to be used in a separate study and was not included in the present analysis) were distributed among the athletes through their respective coaches. The athletes were informed by their coach or trainer that the researcher was looking at the eating attitudes of athletes in a number of different sports. The option of not participating was made available to all the athletes. The participants were ensured confidentiality and anonymity as no identification other than their age, sex, sport and team affiliation were required. The athletes and coaches were informed that feedback on group and complete study results would be made available upon completion of the research.

The athletes were requested to complete and return the questionnaires to their coaches, sealed in the brown envelope provided. The coaches were then responsible for mailing the completed and unused questionnaires back to the researcher. In a number of cases the researcher personally collected the questionnaires directly from coaches and athletes. In an effort to increase the return rate, follow-up phone calls were made to the athletic directors and coaches of the participating institutions and clubs on several occasions. Data were collected from March through October 1989. After the college and University classes ended in April, supplementary data were obtained in diving, gymnastics and judo, at the Canadian National Championships for each of these sports.

At the end of the data collection process, 277 completed questionnaires were returned from the 693 sent out, giving a return rate of 40%. Of the 277 returns 86 were eliminated from the study sample since they did not meet the criteria of being "high performance" college or university athletes, or were incomplete. This left 191 athletes (104 females, 87 males) in the final study sample.

It should be noted that the return rate may have been affected by a number of factors. Many of the questionnaires were distributed in March when many varsity teams who had not made it to the Canadian Interuniversity Athletic Union (C.I.A.U.) Championships were disbanding for the year, making access to the athletes more difficult. In addition, being at the tail end of the school year, most of the athletes are faced with a number of forms and surveys to be filled out as well as being busy preparing for final exams. Another factor was the lack of funds available to provide self addressed return envelopes with prepaid postage which has been known to help increase return rates. One factor that may have artificially lowered the return rate is the fact that many of the coaches were asked to estimate how many questionnaires they would need and there appeared to be a tendency to overestimate rather than underestimate in these cases. As a result there were a surplus of

questionnaires that were not handed out to athletes yet not returned to the researcher. Overall, given that data collection involving mailed questionnaires is known for low return rates, a 40% return is considered to be an acceptable return rate (Lehman & Mehrens, 1979).

Hypotheses

This study was designed to explore whether certain groups of athletes are more at risk for developing eating disorders than others. Based upon the relevant literature and the research question stated above, the following hypotheses were formulated.

1) There will be significant differences in the eating attitudes of female and male athletes. The female athletes will score significantly higher on the EAT than the male athletes.

2) There will be significant differences in eating attitudes of female athletes in non weight restricting sports, female athletes in sports that emphasize leanness and female athletes in weight matched sports.

3) There will be significant differences in eating attitudes of male athletes in non weight restricting sports, male athletes in sports that emphasize leanness and male athletes in weight matched sports.

Data Analysis

A t-test ($p < .05$) was done to check for differences between female and male athletes. Significant differences were found, therefore the data on the male and female athletes were looked at independently. For each of the three groups (i.e. WM, L,and NW) a t-test, ($p < .05$), was performed to check for differences between the two sports. Significant within

group differences occurred, within one of the female groups. As a result, the female sample was collapsed into four groups instead of three. A one way analysis of variance was implemented whereby athletes in each group were compared with athletes in each of the other groups. This was done for both males and females independently. A Tukey test was employed to determine which groups differed significantly from each other and to what extent.

Delimitations

The degree of generalizability for this study is restricted by educational level, location, and type of athlete. The sample consisted of subjects who were willing to participate and met certain criteria. Using a uniform criteria across all the sports may have inadvertently eliminated some athletes that would be considered "high performance" in their field. No personal contact was made with the majority of the subjects as contact was most often made through the coaches. A control group of nonathletes was not used therefore it is not possible to see how the athletes compare with a general college or university population.

Having more than one sport in each group may allow for the generalization of the results to athletes in general. Therefore, the results of this study could be generalized to high performance college and university athletes in North America.

Limitations

One of the main limitations of this study is the number of variables that cannot be controlled for. A key uncontrolled variable is the personality of the athlete. Different sports may attract different types of individuals. Two other uncontrolled for variables are the different training programs and coaches' demands and expectations for different sports and within different universities. Collecting data over a six month period may introduce

potential confounding variables. The stress of school and the competitive season may not be consistent for the subjects which may in turn influence their eating attitudes. The use of self-reporting investigative techniques is limiting in that they are subject to socially desirable responses and incongruencies between reported behavior and actual behavior. However, if inaccuracies exist in the study, they should be an under reporting rather than an over reporting of pathogenic eating behaviors. When interpreting the results it is important to keep in mind that the EAT is not a diagnostic instrument, it can only identify individuals who have the characteristic behaviors and attitudes found in anorexic patients. The sample sizes in some of the sports are relatively small due to the small existing population in these areas, which may make the detection of statistically significant differences between sport classes more difficult. The findings are based upon a 40% return rate.

CHAPTER IV

Results

Descriptives

The EAT scores for the total sample ranged from 2 to 53 points. The female athlete sample had a slightly broader range of scores (2 to 53 points) than the male athletes (3 to 44 points). The scores, for both the males and females, were skewed toward the low end of the scale.

An analysis of item reliability (i.e. internal consistency) for all the items on the EAT scale was done using the whole study sample as well as for males and females separately. A reliability coefficient, Cronbach's alpha = 0.839, was obtained for the total sample, indicating that this instrument works well with this population. Item reliability for the male and females separately yielded Cronbach alphas of 0.826 and 0.831 respectively.

There were 15 athletes (7.9%) in the total sample that had EAT scores within the "anorexic range" as determined by the 30 point cutoff: 11 females (10.6% of the female sample) and 4 males (4.6% of the male sample). Table 2 shows the number of athletes scoring 30 or above in each sport. The mean EAT scores for both females and males for each sport are presented in detail in Table 3. Table 4 lists the mean EAT scores from a number of different studies done with college populations throughout the United States. A one way analysis of variance followed by a Tukey test ($p = .05$) indicate that the athletes in the present study have significantly higher mean EAT scores than a number of college samples in the American studies . Specifically, the female athletes in the present study displayed a significantly higher mean EAT score than the female college students in Button and Whitehouses' 1981 study ($F = 4.09$, $p = .0028$). The male athletes in the present study had,

on the average, significantly higher EAT scores than the male college samples in studies done by Garner and Garfinkel (1979) and Button and Whitehouse (1981) ($F = 8.62$, $p = .0002$). Given the confounding factors of Canadian versus American samples, athletes versus general college populations, as well as the error introduced by a less than perfect reliability for the instrument used, statistically comparing the results of these studies with the present study should be done with great caution. Consequently, the results of this comparison are looked upon with some reservation.

Table 2

Athletes with EAT Scores ≥ 30 by Sport and Gender

		Gender	
Sport	n	Female (%)	Male (%)
Lightweight Rowing	3	2 (9.1)	1 (7.7)
Judo	2	1 (10.0)	1 (11.1)
Gymnastics	3	3 (17.6)	0 (0)
Diving	2	2 (22.2)	0 (0)
Volleyball	2	1 (3.6)	1 (4.5)
Heavyweight Rowing	3	2 (11.1)	1 (4.3)
Total	15	11 (10.6)	4 (4.6)

Table 3

Mean EAT Scores by Sport and Gender

Sport	Gender	
	Female	Male
Lightweight Rowing		
M	21.46	13.62
SD	10.98	9.88
Judo		
M	17.50	14.33
SD	9.16	1.86
Gymnastics		
M	17.59	10.73
SD	10.21	5.26
Diving		
M	19.89	8.11
SD	13.61	4.89
Volleyball		
M	11.29	10.09
SD	8.75	7.02
Heavyweight Rowing		
M	17.17	11.65
SD	7.63	8.75
Total		
M	16.83	11.35
SD	10.30	8.19

Table 4

Mean EAT Scores from Other Studies on College Populations

Study	Gender	
	Female	Male
Garner and Garfinkel (1979)		
N	59	49
M	15.6	8.6*
SD	9.3	5.3
Button and Whitehouse (1981)		
N	446	132
M	12.0*	7.6*
SD	15.4	5.6
Garner et al. (1982)		
N	140	–
M	15.4	–
SD	11.0	–
Gross et al. (1986)		
N	20	–
M	11.5	–
SD	7.5	–
Present Study (1989)		
N	104	87
M	16.8	11.4
SD	10.3	8.2

*significantly different from the present study (1989) at the p = .05 level.

EAT Scores & Gender

A one way analysis of variance revealed that the mean EAT score for female athletes was significantly higher than that for male athletes ($F = 16.13$, $p = .0001$). A two way analysis of variance revealed no interactional effects between gender and sport, therefore the male and female athletes were treated as independent samples.

These results support both parts of Hypothesis 1 which stated that, 1. "There will be significant differences in the eating attitudes of female and male athletes..." and 2. "The female athletes will score significantly higher on the EAT than the male athletes."

Female Athletes - EAT Scores within the Different Sports

Within the female sample the lightweight rowers had the highest EAT mean ($x = 21.46$) and the volleyball athletes scored the lowest with a mean EAT score of $x = 11.29$, (Table 3).

In order to establish the three groups of sport classes (i.e. weight-matched (WM), leanness (L) and nonweight restricted (NW)), t-tests ($p = .05$) were done to check for significant differences between the mean EAT scores of the sports within each sport class (See Table 5). For the female athletes no significant differences were found between sports within the weight-matched (WM) and leanness (L) groups. However, there were significant differences between the volleyball and heavyweight rowing athletes in the non weight restricted (NW) group ($T = 2.41$, $p = .02$). As a result the female sample was collapsed into four groups; Weight Matched (WM) (lightweight rowing and judo) ; $n = 32$, Leanness (L) (gymnastics and diving); $n = 26$, Non weight restricted 1 (NW1) (volleyball) $n = 28$, and Non weight restricted 2 (NW2) (heavyweight rowing); $n = 18$.

A one way analysis of variance was then run on these four groups. Significant differences between groups were revealed ($F = 4.479$, $p = .0054$) therefore a Tukey was employed to identify which groups were significantly different from each other. The (WM) sport class (lightweight rowing and judo) (mean = 20.22) and the (L) sport class (diving and gymnastics) (mean = 18.39) were both significantly different at the .05 level from the NW1 sport class (volleyball) (mean = 11.29). In other words, athletes participating in lightweight rowing, judo, diving and gymnastics (the Weight Matched and Leanness sport classes) had significantly higher mean EAT scores than the volleyball athletes (Non weight restricted sport class). These findings appear to support Hypothesis 2 which stated that,"There will be significant differences in eating attitudes of female athletes in non weight restricting sports, female athletes in sports that emphasize leanness and female athletes in weight matched sports."

Table 5

t-Tests
Mean EAT Scores by Sports within Sport Classes (for female athletes)

Variable	Number of cases	Mean	Std Dev	Std Error
EAT scores				
WM:Lightwt Rowing	22	21.4545	10.975	2.340
Judo	10	17.5000	9.156	2.895
NWR:Heavywt Rowing	18	17.1667	7.625	1.797
Volleyball	28	11.2857	8.747	1.653
L: Gymnastics	17	17.5882	10.205	2.475
Diving	9	19.8889	13.606	4.535

Table 5 Cont'd

Variable	F Value	2-Tail Prob.	Pooled Variance Estimate T Value	Degrees of Freedom	2-Tail Prob.
WM	1.44	0.589	0.99	30	.330
NWR	1.32	0.563	2.34	44	.024*
L	1.78	0.312	-0.49	24	.630

*significant at p = .05

Male Athletes - EAT Scores within the Different Sports

Within the male sample, the judo athletes had the highest means on the EAT ($\bar{x}$ = 14.33) while the divers scored the lowest ($\bar{x}$ = 8.11). As with the female athletes, t-tests were run on the male sample to check for significant differences between the mean EAT scores of the sports within each sport class (see Table 6). No significant differences were found between sports within each sport class, therefore the data were collapsed across sports resulting in the following three sport classes: WM (lightweight rowing and judo), n = 22; L (diving and gymnastics), n = 20; and NW (heavyweight rowing and volleyball), n = 45. Comparing the variables of mean EAT score and sport class, a one way analysis of variance revealed no significant differences between any of these three groups. Therefore these results do not support hypothesis 3 which proposed that,"There will be significant differences in eating attitudes of male athletes in non weight restricting sports, male athletes in sports that emphasize leanness and male athletes in weight matched sports."

Table 6

t-Tests
Mean EAT Scores by Sports within Sport Classes (for male athletes)

Variable	Number of cases	Mean	Std Dev	Std Error
EAT scores				
WM:Lightwt Rowing	13	13.6154	9.879	2.740
Judo	9	14.3333	11.864	3.955
NWR:Heavywt Row	23	11.6522	8.752	1.825
Volleyball	22	10.0909	7.016	1.496
L: Gymnastics	11	10.7273	5.255	1.585
Diving	9	8.1111	4.885	1.628

Table 6 Cont'd

Variable	F Value	2-Tail Prob.	Pooled Variance Estimate T Value	Degrees of Freedom	2-Tail Prob.
WM	1.44	0.547	-0.15	20	.879
NWR	1.56	0.315	0.66	43	.514
L	1.16	0.852	1.14	18	.268

EAT Subscales

As indicated previously, an analysis of item reliability for the total EAT instrument proved to be adequate for this sample; however an analysis of item reliability for the EAT

subscales revealed that only two of the three subscales identified by Garner et al. (1982) are considered reliable within this sample. The "Diet" and the "Bulimia" subscales had Cronbach alphas of 0.826 and 0.749 respectively. The "Oral" subscale had an unacceptable internal reliability with a Cronbach alpha = 0.176. According to Garner et al. (1982), the "Diet" subscale is a cluster of items that reflect an abnormal avoidance of fattening foods and shape preoccupation. The "Bulimia" subscale items are more related to preoccupation with and thoughts about food as well as items which are indicative of bulimia (i.e. bingeing and purging). The "Oral" subscale relates to self-control of eating and the perceived pressure from others to gain weight. Scores on the "Diet", "Bulimia" and "Oral" subscales can range from 0-39, 0-18 and 0-21, respectively. Table 7 lists the subscale scores for each of the sport classes.

Table 7

Mean EAT Subscale Scores for Different Sport Classes

	Subscales	
Sport Class	Diet M (S.D.)	Bulimia M (S.D.)
Females		
WM	7.47 (5.51)	2.72 (3.46)
L	8.19 (5.76)	1.54 (2.58)
NW1	4.45 (5.15)	0.59 (0.91)
NW2	7.17 (4.89)	1.11 (1.57)
Males		
WM	5.05 (7.70)	0.68 (1.46)
L	2.85 (3.30)	0.50 (1.05)
NW	3.44 (4.46)	0.47 (1.14)

A one way analysis of variance was run on the sport classes and the "Diet" subscale scores. There were no significant differences found between the sport classes for either the men or the women, however; differences between the womens' sport classes did approach significance ($F = 2.622$, $p = .0548$). This is attributed to the Leanness (L) sport class having, on the average, higher scores on the "Diet" subscale than the Non weight restricted 1 (NW1) sport class.

On the "Bulimia" subscale a one way analysis of variance, comparing mean subscale scores and different sport classes, revealed no significant differences for the male athletes. Significant differences were found for the female athletes on these variables ($F = 4.1461$, $p = .0081$) therefore a Tukey ($p = .05$) was performed identifying the WM sport class as having a significantly higher mean "Bulimia" subscale score than the NW1 sport class.

The original research on these subscales was done with a group of anorexic patients (females only) and it is unclear how applicable these subscales may be to a non clinical and/or male population. Therefore any results obtained with these subscales should be viewed with great caution. These tentative results are proposed only to identify various trends that may be emerging and suggest the need for further exploration.

Competitiveness of Setting

A cross-tabulation of EAT scores by the level of competition experience (i.e. competing at provincial, national or international level) was done. None of the athletes that competed solely at a provincial level scored within the "anorexic" range. The only athletes that scored 30 or more on the EAT were engaged in a National and/or International level of competition. This trend was apparent for both the male and female athletes. Interestingly, t-tests did not reveal statistically significant differences between the overall mean EAT

scores of the Provincial level athletes versus the National and/or International level athletes for either the men or the women. However, this is not as contradictory as it first may appear as the relatively small number of National and/or International athletes scoring in the "anorexic" range may have a minimal effect on increasing the overall mean of the entire group of athletes.

Ancillary Findings

A cross-tabulation of EAT scores by Universities was generated. It is interesting to note that for the total sample (males and females), 46.7% of the athletes scoring greater or equal to 30, were from two universities, University of Alberta and University of British Columbia, but these two universities comprised only 22.1% of the sample population.

A breakdown of this cross-tabulation by gender indicates this trend is more applicable to the female athletes than the males. For the female athletes, 6 of the 11 (54.6%) athletes scoring in the "anorexic" range are from the University of Alberta (3 athletes - 27.3%) and University of British Columbia (3 athletes - 27.3%). The University of Alberta and University of British Columbia, together make up 32.1% of the female sample. Within the male sample only 1 of the 4 (25%) male athletes scoring in the "anorexic" range is from the University of Alberta and none were from the University of British Columbia. The Universities of Alberta and British Columbia make up 10.3% of the male sample (see Appendix C for cross-tabulation tables).

CHAPTER V

Discussion and Conclusion

Overview

The purpose of this study was to identify whether athletes in certain sports display a higher tendency toward eating disorders than athletes in other sports. Specifically, differences between three sports classes of athletes; Leanness, Weight Matched and Non Weight Restricted were studied.

Although athletes as a group were more preoccupied with food and weight than the general college population, they did not appear to have a higher prevalency of individuals considered at risk for developing an eating disorder. Female athletes were found to be significantly more at risk for developing an eating disorder than male athletes. However, male athletes had a higher tendency toward eating disorders than the general male population which suggests that athletic participation may be a precipitating factor. Differences between the sport classes for female athletes were found, suggesting a link between the type of sport an athlete is involved in and the expression of abnormal eating attitudes. That is, athletes in sports that emphasize leanness or demand an explicit weight standard for the sake of appearance or performance demonstrated more extreme eating habits and attitudes than athletes in non weight restricting sports. There is also evidence that some of the eating attitudes are reflective of certain characteristics within different sports, thereby reinforcing the suggestion that a direct relationship between sport and eating disorders may exist. These findings as well as each hypothesis of the study will be reviewed and discussed.

Limitations

This study is subject to the limitations of survey research. The use of self reporting, investigative techniques is limiting in that they are subject to socially desirable responses and incongruencies between reported and actual behavior. However, if inaccuracies exist in the study they would likely be in the direction of an under-reporting rather than an over reporting of pathogenic eating behaviors. Although the respondent rate is comparable to other survey studies, the results of this study could still be questioned and the possibility of bias is recognized because, presumably, respondents with socially unacceptable behaviors and attitudes would be less likely to complete the questionnaires. This would also contribute to an under reporting of pathogenic eating behaviors.

In addition to limits imposed by sampling, it is important to remember that one cannot use results from a questionnaire as diagnostic of an eating disorder. However, an instrument such as the EAT can be used as a screening instrument to identify individuals who have abnormal eating attitudes and in turn may be predisposed and/or have tendencies towards developing an eating disorder.

Athletes in General

This study identified a number of male and female athletes who scored over 30 on the EAT, placing them in the "anorexic" range. The prevalency rate for the female athletes is comparable to what has been reported in other studies on college and university populations. Past research indicates that 6 % to 13 % of college aged female students score $\geq$ 30 on the EAT (Button & Whitehouse, 1981; Garner & Garfinkel, 1979; Raciti & Norcross, 1987; Williams et al., 1986). The present findings indicate that over 10 % of post secondary female athletes fall within this category. These results suggest that, overall, female athletes do not have greater tendencies towards extreme weight preoccupation and/or eating disturbances than the general college population. The prevalency of disturbed eating

patterns for the male athletes, on the other hand, is higher than that reported for the general and college population. Most estimates suggest that 0 to 1 % of men score within the "anorexic" range; however, in the present study 4.6 % of the male athletes are within this range.

In the general population, eating disorders are reported to affect women much more frequently than men ((DSM III) American Psychiatric Association, 1980; Bruch, 1973; National Eating Disorder Centre, 1985). Some experts suggest that, in athletics, men and women are at equal risk for developing an eating disorder (Smith, 1980; Zucker et al., 1985). The current study does not support this view. The prevalency rates of this study indicate that, as in the general population, female athletes are affected more frequently than male athletes. However, there is evidence that male athletes are affected to a relatively greater degree than males in the general population. This may suggest that pressures distinctly related to athletic participation, rather than just sociocultural expectations traditionally geared toward females, contribute to the development of an eating disorder. Another explanation may be that athletics creates a catalytic situation for, or attracts, individuals already predisposed in that direction. In any case, although male athletes are affected to a relatively higher degree than in the general population, it appears they are still not as susceptible to the development of eating disorders as female athletes are.

Although it is difficult to draw conclusions when comparing results from various studies that are confounded by the use of different samples, different methodology and the error introduced by a less than perfect reliability for the instrument used, certain trends can be identified. The athletes from the present study have, on the average, higher scores on the EAT than other studies done on college aged individuals. Although the female athletes' scores in this study are statistically significantly different from only one

other major study, the male athletes' scores are consistently significantly different from the other studies. Although, overall, the athletes' scores are within the normal range, these results support the contention that athletes are more preoccupied with food and weight than the general and college population. This finding is not surprising given the nature of sports where a strong focus on health and physique is required. What becomes important is whether this elevated preoccupation exists to such an extent that it borders on being abnormal or dysfunctional. As stated previously, data from this study do not indicate that extensive eating pathology exists among the athletes as a group; however, this is not to say that certain subgroups of athletes may not be more at risk than others.

The relatively small number of athletes who score in the "anorexic" range (i.e. above the 30 point cutoff) does not completely substantiate making conclusions as to which sport classes or subgroups may be experiencing a higher incidence of athletes who have tendencies towards an eating disorder; however, certain patterns are apparent. The highest percentage of female athletes scoring $\geq$ 30 are from sports that emphasize leanness (Gymnastics 17.6 %; Diving 22.2 %) while male athletes in weight matched sports, such as Lightweight rowing and Judo, have the highest percentages of male athletes scoring in this "anorexic" range (7.7 % and 11.1 % respectively). This pattern is also reflected by the fact that female athletes in sports that emphasize leanness and/or put explicit demands for a certain weight have, on the average, the highest EAT scores while athletes in non weight restricting sports have the lowest scores. Therefore, although the EAT data support Lindboe and Sletteboe's, 1984, contention that, as a group, athletes are not at higher risk for eating disorders than the general population, there is evidence that certain subgroups of athletes may be at greater risk than others. This is consistent with Borgen and Corbin's 1987 study which did not find any significant differences between athletes and nonathletes as a whole but found significant differences between subgroups of athletes in that only athletes in sports that

emphasized leanness experienced exceptional preoccupation with weight or had tendencies towards eating disorders. In the present study, female athletes in Lightweight rowing, Judo, Gymnastics, and Diving all score significantly higher than athletes from Volleyball. Interestingly, significant differences do not show up between these Leanness and Weight Matched sports and Heavyweight rowing which was originally perceived as a non weight restricting sport along with Volleyball. One explanation may be that a focus on body size, weight and therefore food does exist in Heavyweight rowing as it is important for these athletes to be as big and strong as possible. Hence although it is contrary to other sports, which are primarily concerned about a lean or small body size, there still exists an emphasis and focus on body size that could create a preoccupation with food and weight. National team heavyweight female rowers have commented on the conflicting feelings associated with feeling big and unfeminine yet needing to build up in size for optimal athletic performance (Clarke & Gwynne-Timothy, 1988). This may account for the significant differences between the female volleyball athletes and the female heavyweight rowers in their eating attitudes and may indicate that it is questionable whether women's Heavyweight rowing can be classified as a sport with no specific weight and/or physique requirements. Significant differences on the EAT between subgroups of male athletes were not found.

Hypothesis 1

The findings of this study support hypothesis number one which stated that female athletes would score significantly higher on the EAT than the male athletes. As mentioned previously, although male athletes demonstrated a higher tendency toward developing eating disorders than the general male population, it appears that they are still not as susceptible to the development of eating disorders as females are. One could hypothesize that this may be attributed to the possibility that any pressures male athletes may experience related to their athletic participation are not compounded by the sociocultural

expectations and pressures that most women experience. This is consistent with Drummer et al.'s (1987) study which found that girls wanted to lose weight for appearances while boys were more often motivated by improvement of their performance.

Hypothesis 2

The results also generally support hypothesis number two which stated that there would be significant differences between the eating attitudes of female athletes from different sport classes. The results for the female athletes in the present study are consistent with findings from other studies that demonstrate that athletes participating in activities that emphasize leanness for better performances and appearances sakes are more prone toward eating disorders than athletes in non weight restricting sports. (Borgin & Corbin, 1987; Guthrie, 1986; Henry, 1982; Rosen et al., 1986). It is important to reiterate that the significant differences between subgroups, or sport classes, of athletes are not conclusive of a higher prevalency of eating disorders among Leanness and Weight Matched groups of athletes. Rather, the data are reflective of higher risks some athletes may face in relation to developing abnormal eating attitudes and/or an eating disorder. This study goes a step further than previous studies have by dividing up subgroups of athletes to a more precise degree. Athletes that participate in activities that emphasize leanness for appearance and performance purposes are separated from athletes that face strict weight requirements in order to compete. This distinction reveals that female athletes in activities that require certain weight requirements but not necessarily a slim physique also have significantly more preoccupation with food and weight than female athletes in non weight restricting sports. This may support a more direct link to the intrinsic pressures created by a sport itself rather than reflecting possible sociocultural demands and expectations in terms of appearances or the attraction of certain predisposed individuals to "thin" sports.

Differences between subgroups of athletes are also indicated when looking at the subscales of the Eating Attitudes Test. Female athletes in the Leanness sport class demonstrate a greater abnormal avoidance of fattening food and shape preoccupation than athletes in non weight restricted sports such as volleyball. This is consistent with the demands of sports such as gymnastics and diving which associate an aesthetically pleasing (i.e. thin) physique with performance success. Female judo athletes and lightweight rowers are less concerned with shape than divers and gymnasts but have significantly more preoccupation with food in general as well as symptoms indicative of bulimia than female athletes in non weight restricted sports. This is also consistent with the demands of a "weight matched" sport where the emphasis is not on body shape and size but rather on being below a certain competitive weight. These athletes do not focus on how they look but on what the weigh-in scale says. It is understandable how in an effort to manipulate and control the scales these athletes may become vulnerable to the binge/purge cycle which is characteristic of bulimia.

Although, on average, the Leanness and Weight Matched athletes are within the normal ranges on these subscales it is important to recognize the trends that exist. The different focus and eating attitudes of athletes from different sports appears to correlate with the characteristics associated with the type of sport an athlete is involved in. This again may be evidence of the influence various sports may have on their athletes as suggested by Guthrie's 1986 study which revealed that the majority of eating disordered athletes attributed the onset and/or development of their eating pathology to their athletic participation. However no causal link can be determined at this point and caution must be used with these speculations as research on these subscales are basically in the preliminary stages.

Hypothesis 3

Hypothesis number three, which is the same as hypothesis number two except that differences between male athletes rather than female athletes are proposed, was not supported by the data. Although male athletes, overall, appeared to be affected more by eating disorders than the general male population, there were no significant differences between different sport classes of male athletes. This may be attributed to the relatively small sample size and low incidence rate which would not allow for significant differences to show up very easily. At any rate, the presence of an overall higher incidence of "at risk" male athletes than in the general population suggests that additional and more extensive research on male athletes may be warranted.

Achievement Pressure

The fact that only athletes competing at a National and/or International level score greater or equal to 30 on the EAT provides support for a link between achievement pressures and/or expectations and a tendency towards the expression of eating disorders. Garner & Garfinkel (1980) propose that individuals who experience increased pressure to focus on a slim body shape are at a higher risk for developing eating disorders. Garner & Garfinkel also suggest that the risk is compounded by competitiveness or intense performance expectations. Their research indicates that it is not the competitive environment alone that appears to contribute to greater eating difficulties but its combination with the pressure to be slim. Henry (1982) also found a similar link in her study where high mileage runners (and therefore considered the more elite athletes) scored twice as high on the EAT as the low mileage runners. These results also reflect the findings of other studies wherein women with eating disorders, especially anorexia nervosa, have often been described as perfectionistic, people-pleasers with very high achievement expectations (Bruch, 1973, 1981; Crisp, Hsu, Harding & Hartshorn, 1980; Muuss, 1985; Pumariega & LaBarbera, 1986;

Strober, 1980). These characteristics, that are so commonly found in women with eating disorders, are the same as those required of athletes that compete at an elite level. However with athletes these high self expectations may originate more from the external influences that come from the arena of competitive sports rather than from internal pressures relating to underlying insecurities and feelings of inadequacy that women with eating disorders in the general population often experience.

It is unknown why such a large proportion of the athletes scoring in the "anorexic" range was from two universities; University of Alberta and University of British Columbia. Athletes from these two universities, who participated in the study, were mainly from two sports; gymnastics and volleyball. Placings in the top four at either the C.I.A.U. Championships (i.e. Nationals) or the Canadian Western Conference over the past three years by both universities' men's and women's gymnastic teams suggest that these universities have a good number of elite athletes. It may be that these universities have programs that produce or attract a larger number of high level athletes than other institutions and therefore have a larger proportion of the elite athletes who may be more prone towards developing eating disorders than lower level athletes. Another possibility is that the athletic programs of these universities may create intrinsic demands and stresses that are contributing factors towards the development of eating disorders. These pressures could stem from any number of variables (eg: coaching style, personality of a coach, type of expectations put upon the athletes, etc.). This is something that needs to be explored further.

Implications for the Future

It is unclear at this point whether or not the athletes from the higher risk sport classes display eating attitudes that are abnormal and/or dysfunctional or just a necessary condition of being an elite athlete. But certain trends linking sports with the tendency

towards eating disorders and the existence of a significant number of athletes scoring in the "anorexic" range (i.e. more than 1 out of every 10 female athletes may have, or be at risk for developing, an eating disorder) suggest, if not demand, that steps be taken to be alert to and to establish certain preventative measures as precautions against the propogation of this very serious and, at times, life threatening disease. The following are some practical implications derived from this and other similar studies for college athletes and those working with them:

1. Overemphasis on body weight, size or image should be avoided, especially for athletes that already need to focus on leanness or a specific weight standard.
2. Careful monitoring of athletes' weight should be made by coaches. This is in order to detect wide fluctuations in weight loss or gain which may be indicative of pathogenic eating patterns. Private weigh-ins are helpful to reduce stress and embarrassment for the athletes.
3. Education is needed for both coaches and athletes on i) good nutrition, ii) proper weight loss methods and expectations, iii) the dangers of pathogenic eating patterns, and iv) the signs and symptoms indicative of an eating disorder.
4. An athlete suspected of having an eating disorder should be dealt with by referring her/him to the appropriate specialists such as physicians, counselors, and nutritionists who will give the athlete the physical, emotional, psychological, and educational support she/he needs. This should be done while reassuring the athlete that their team position and membership will not be affected and their confidentiality will be maintained. Early detection of athletes showing signs of an eating disorder is paramount to a satisfactory recovery.

5. The aesthetic ideals of body image and weight requirements of various sports should be re-evaluated at the policy making level. Less restrictive expectations for what is considered an acceptable body image or weight standard for various sports are required.

Future Research

Results from the current study reveal that various subgroups of athletes are more preoccupied with weight and food than others. There is evidence that certain characteristics or stressors associated with leanness and weight-matched sports may contribute to this preoccupation. A need for further research to clarify the role of sports in the expression of eating disorders is required. This study leaves a number of questions unanswered:

1. What is the prevalence of actual clinical eating disorders among high risk athletes?
2. What factors contribute to eating disordered behavior in the athletic population?
3. How do athletes differ from the general and college population?
4. Where does discipline end and pathology begin? More specifically, is the higher preoccupation with food and weight among certain subgroups of athletes a problem, or is it just a characteristic of being a disciplined athlete? Does an athlete have to be classified as anorexic or bulimic, or is it a problem when her/his eating attitudes are dysfunctional enough to affect her/his performances, physical, psychological or emotional well-being?
5. What is the awareness and knowledge level of coaches and athletes regarding eating disorders?

Both qualitative and quantitative methods could be useful in answering some of these questions. Qualitative studies aimed at understanding the personal experience of the athlete may provide information not accessible via traditional research paradigm.

Longitudinal studies, though expensive and time consuming, would be useful in tracing the origins and developmental process of eating disorders among young athletes.

Replication of this study with a larger sample, an equivalent control group, more sport specific criteria for identifying "high performance" athletes as well as follow-up interviews with identified "high risk" athletes would yield considerable useful data.

The roles of coaches, sport programs and the personality of the athlete need to be examined further to determine their impact in relation to eating disorders. This in turn may allow us to better predict who are at risk for developing as eating disorder and what, if any, interventions can prevent serious harm.

BIBLIOGRAPHY

American Psychiatric Association. (1980). Diagnostic and statistical manual of mental disorders (3rd. ed.). Washington, D.C.: Author.

Baird, P., & Sights, J.R. (1986). Low self-esteem as a treatment issue in the psychotherapy of anorexia and bulimia. Journal of Counseling and Development, 64 (1), 449-451.

Basseches, H.I., & Karp, S.A. (1984). Field dependence in young anorectics and obese women. Psychotherapy and Psychosomatics, 41, 33-37.

Blumenthal, J.A., O'Toole, L.C. & Chang, J.L. (1984). Is running an analogue of anorexia ?: An empirical study of obligatory running and anorexia nervosa. Journal of American Medical Association, 252 (4), 520-523.

Blumenthal, J.A., Rose, S., & Chang, J.L. (1985). Anorexia nervosa and exercise: Implications from recent findings. Sports Medicine, 2, 237-247.

Boe, E. (1985 Fall). The physiological and psychological consequences of excessive weight loss in athletics. Athletic Training, 238-242.

Borgen, J.S., & Corbin, C.B. (1987). Eating disorders among female athletes. Psychology Today, 15 (2), 89-95.

Bruch, H. (1973). Eating disorders: obesity, anorexia nervosa and the person within. New York: Basic Books.

Bruch, H. (1977). Pyschotherapy in eating disorders. Canadian Psychiatric Association Journal, 22, 102-107.

Bruch, H. (1981). Developmental considerations of anorexia nervosa and obesity. Canadian Journal of Psychiatry, 26, 212-217.

Buickel, S. (1983 Summer). Anorexia nervosa and bulimia in athletes. Athletic Training, 137-138.

Burckes-Miller, M.E., & Black, D.R. (1988). Male and female college athletes: prevalence of anorexia nervosa and bulimia nervosa. Athletic Training, 23(2), 137-140.

Button, E.J., & Whitehouse, A. (1981). Subclinical anorexia nervosa. Psychological Medicine, 11, 509-516.

Clarke, H., & Gwynne-Timothy, S. (1988). Stroke: The inside story of olympic contenders. Toronto: James Lorimar.

Combs, M.R. (1982). By food possessed. Women's Sports, 4, 12-17.

Crisp, A.H., Hsu, L.K.G., Harding, B., & Hartshorn, J. (1980). Clinical features of anorexia nervosa: A study of a consecutive series of 102 female patients. Journal of Psychosomatic Research, 24, 179-191.

Crisp, A.H., Palmer, R.L., & Kalucy, R.S. (1976). How common is anorexia nervosa? A prevalence study. British Journal of Psychiatry, 128, 549-554.

Dare, C. (1985). The family therapy of anorexia nervosa. Journal of Psychiatric Research, 19 (2,3), 435-443.

Drummer, G.M., Rosen, L.W., Heusner, W.W., Roberts, P.J., & Counsilman, J.E. (1987). Pathogenic weight-control behaviors of young competitive swimmers. The Physician and Sportsmedicine, 15(5), 75-84.

Epling, W.F., & Pierce, W.D. (1984). Activity based anorexia in rats as a function of opportunity to run on an activity wheel. Nutrition and Behavior, 2, 37-49.

Feighner, J.P., Robins, E., Guze, S.B., Woodruff, D.A., Winokur, G., & Munoz, R. (1972). Diagnostic criteria for use in psychiatric research. Archives of General Psychiatry, 26, 57-63.

Garfinkel, P.E. (1981). Some recent observations on the pathogenesis of anorexia nervosa. Canadian Journal of Psychiatry, 26(4), 218-222.

Garner, D.M. (1986 Spring). Psychotherapy for anorexia nervosa and bulimia nervosa. The Clinical Psychologist, 32-33.

Garner, D.M., & Bemis, K.M. (1982). A cognitive-behavioral approach to anorexia nervosa. Cognitive Therapy and Research, 6(2), 123-150.

Garner, D.M. & Garfinkel, P.E. (1979). The eating attitudes test: An index of the symptons of anorexia nervosa. Psychological Medicine, 9, 273-279.

Garner, D.M. & Garfinkel, P.E. (1980). Sociocultural factors in the development of anorexia nervosa. Psychological Medicine, 10, 647-656.

Garner, D.M., Garfinkel, P.E., Schwartz, D., & Thompson, M. (1980). Cultural expectations of thinness in women. Psychological Reports, 47, 483-491.

Garner, D.M., Olmstead, M.P., Bohr, Y., & Garfinkel, P.E. (1982). The eating attitudes test: Psychometric features and clinical correlates. Psychological Medicine, 12, 871-878.

Garner, D.M., Olmstead, M.P., & Garfinkel, P.E. (1983). Does anorexia nervosa occur on a continuum? International Journal of Eating Disorders, 2(4), 11-20.

Garner, D.M., Olmstead, M.P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. International Journal of Eating Disorders, 2(2), 15-34.

Geraty, P.J. (1983). Anorexia nervosa and bulimia of the athlete. UAHPERD Journal, 15(1), 13-14.

Goldberg, S.C., Halmi, K.A., Eckert, E.D., Casper, R.C., Davis, J.M., & Roper, M. (1980). Attitudinal dimensions in anorexia nervosa. Journal of Psychiatric Research, 15, 239-251.

Greenfeld, D., Quinlan, D.M., Harding, P., Glass, E., & Bliss, A. (1987). Eating behavior in an adolescent population. International Journal of Eating Disorders, 6(1), 99-111.

Guthrie, S.R. (1986 Fall). Eating disorders among intercollegiate athletes. Delta Psi Kappa Foil, 10-12.

Hamilton, L.H., Brooks-Gunn, J., Warren, M.P., & Hamilton, W.G. (1986 July/August). The impact of thiness and dieting on the professional ballet dancer. CAHPER Journal, 30-35.

Healy, K., Conroy, R.M., & Walsh, N. (1985). The prevalence of binge-eating and bulimia in 1063 college students. Journal of Psychiatric Research, 19(2/3), 161-166.

Henry, Jr. S. (1982 March). The price of perfection. Why some young women runners fall victim to anorexia nervosa. The Runner, 35-39.

Hsu, L.K.G. (1986). The treatment of anorexia nervosa. American Journal of Psychiatry, 143, 573-581.

Kalucy, R.S., Crisp, A.H., Lacey, J.H., & Harding, B. (1977). Prevalence and prognosis in anorexia nervosa. Australian and New Zealand Journal of Psychiatry, 11, 251-257.

Kaplan, A.S., & Woodside, D.B. (1987). Biological aspects of anorexia nervosa and bulimia nervosa. Journal of Consulting and Clinical Psychology, 55 (5), 645-653.

Katzman, M.A., Wolchik, S.A., & Braver, S.L. (1984). The prevalence of frequent binge eating and bulimia in a nonclinical college sample. International Journal of Eating Disorders, 3(3), 53-61.

Lehman, I.J., & Mehrens, W.A. (Eds) (1979). Educational research readings in focus. (2nd ed.). New York: Holt, Rinehart, and Winston.

Leichner, P. (1986 March/April). Anorexia nervosa, bulimia and exercise. Coaching Review, 66-68.

Leichner, P., Arnett, J., Rallo, J.S., Srikameswaran, S., & Vulcano, B. (1986). An epidemiologic study of maladaptive eating attitudes in a canadian school age population. International Journal of Eating Disorders, 5(6), 969-982.

Lindboe, C.F. & Slettebo, M. (1984). Are young female gymnasts malnourished? European Journal of Applied Physiology, 52, 457-462.

Leon, G.R., Lucas, A.R., Colligan, R.C., Ferdinande, R.J., & Kamp, J. (1985). Sexual, body-image, and personality attitudes in anorexia nervosa. Journal of Abnormal Child Psychology, 13(2), 245-258.

Maine, M. (1985). Effective treatment of anorexia nervosa: The recovered patients' view. Transactional Analysis Journal, 15(1), 48-54.

McLaughlin, E.F., Karp, S.A., & Herzog, D.B. (1985). Sense of ineffectiveness in women with eating disorders: A clinical study of anorexia nervosa and bulimia. International Journal of Eating Disorders, 4(4), 511-523.

Mitchell, J.E., & Eckert, E.D. (1987). Scope and significance of eating disorders. The American Psychological Association, 55(5), 628-634.

Mitchell, J.E., Pomeroy, C., & Huber, M. (1988). A clinicians' guide to the eating disorders medicine cabinet. International Journal of Eating Disorders, 7(2), 211-223.

Moriaty, D., & Moriarty, M. (1986 July/August). Sport/fitness programs and sociocultural influences in eating disorders. CAHPER Journal, 4-9.

Muuss, R.E. (1985 Fall). Adolescent eating disorder: anorexia nervosa. Adolescence, 20 (79), 525-536.

National Eating Disorder Information Centre (1985). An Introduction to Eating Disorders: The Facts on Anorexia Nervosa and Bulimia. Toronto.

National Eating Disorder Information Centre, (1989 April). The role of pharmacotherapy in the treatment of eating disorders. National Eating Disorder Information Centre Bulletin, 4(2), 1-4.

Nevo, S. (1985). Bulimic symptoms: Prevalence and ethnic differences among college women. International Journal of Eating Disorders, 4(2), 151-168.

Nylander, I. (1971). The feeling of being fat and dieting in a school population. Acta Sociomedica Scandinavica, 3, 17-26.

Orbach, S. (1978). Fat is a feminist issue. New York: Berkley Books.

Pope, H.G., Hudson, J.I., & Yurgelun-Toss, D. (1984). Prevalence of anorexia nervosa and bulimia in three student populations. International Journal of Eating Disorders, 3(3), 45-51.

Pumariega, A.J., & LaBarbera, J.D,. (1986). Eating attitudes and personality variables in a nonclinical sample. International Journal of Eating Disorders, 5(2), 285-294.

Pyle, R.L., Halvorson, P.A., Neuman, P.A. & Mitchell, J.E. (1986). The increasing prevalence of bulimia in freshman college students. International Journal of Eating Disorders, 5(4), 631-647.

Raciti, M.C., & Norcross, J.C. (1987). The EAT and EDI: Screening, interrelationships, and psychometrics. International Journal of Eating Disorders, 6(4), 579-586.

Richert, A.J., & Hummers, J. (1986). Patterns of physical activity in college students at possible risk for eating disorder. International Journal of Eating Disorders, 5, 79-86.

Rosen, L.W., McKeag, D.B., Hough, D.O., & Curley, V. (1986). Pathogenic weight-control behavior in female athletes. The Physician and Sportsmedicine, 15(1), 79-86.

Russell, G.F.M. (1979). Bulimia nervosa: An ominous variant of anorexia nervosa. Psychologial Medicine, 9, 429-448.

Russell. G.F.M. (1983). Anorexia nervosa and bulimia nervosa. In G.F.M. Russell and L. Hersov (Eds.), Handbook of Psychiatry. Volume 4: The Neuroses and Personality Disorders. Cambridge: Cambridge University Press.

Scott, R.L., & Baroffio, J.R. (1986). An MMPI analysis of similarities and differences in three classifications of eating disorders: Anorexia nervosa, bulimia, and morbid obesity. Journal of Clinical Psychology, 42(3), 708-712.

Slavin, J.L. (1987 March). Eating disorders in Athletes. JOPERD, 33-36.

Smith, N.J. (1980). Excessive weight loss and food aversion in athletes simulating anorexia nervosa. Pediatrics, 66(1), 139-142.

Strauss, J., & Ryan, R.M. (1987). Autonomy disturbances in subtypes of anorexia nervosa. Journal of Abnormal Psychology, 96(3), 254-258.

Strober, M. (1980). Personality and symptomatological features in young, nonchronic anorexia nervosa patients. Journal of Psychosomatic Research, 24, 353-359.

Strober, M. (1981). A comparative analysis of personality organization in juvenile anorexia nervosa. Journal of Youth and Adolescence, 10 (4), 285-295.

Szmukler, G.I., Eisler, I., Gillies, C. & Hayward, M.E. (1985). The implications of anorexia nervosa in a ballet school. Journal of Psychiatric Research, 19(2/3), 177-181.

Thakur, K., & Thakur, A. (1989, May). Hypnotherapy for anorexia nervosa. Paper presented at the Canadian Guidance and Counseling Association Strategies for Wellness conference, Edmonton, Alberta.

Weight, L.M., & Noakes, T.D. (1986). Is running an anolog of anorexia?: A survey of the incidence of eating disorders in female distance runners. Medicine and Science in Sports and Exercise, 19(3), 213-217.

Weiner, H. (1983). The hypothalamic - pituitary - ovarian axis in anorexia bulimia nervosa. International Journal of Eating Disorders, 2(4), 109-116.

Weinreich, P., Doherty, J., & Harris, P. (1985). Empirical assessment of identity in anorexia and bulimia nervosa. Journal of Psychiatric Research, 19(2/3), 297-302.

Weinstein, H.M., Gordons, J. ,Hill, R., Hoskins, M., & Salerno, G. (1985). Personality patterns of bulimic college women. (From JACH, 1985, 34, 74).

Weisberg, L.J., Norman, D.K., & Herzog, D.B. (1987). Personality functioning in normal weight bulimia. International Journal of Eating Disorders, 6(5), 615-631.

Wheeler, G.D., Wall, S.R., Belcastro, A.N., Conger, P., & Cumming, D.C. (1986). Are anorexic tendencies prevalent in the habitual runner? British Journal of Sports Medicine, 20, 22-81.

Whitehouse, A.M., Phil, M., & Button, E.J. (1988). The prevalence of eating disorders in a U.K. college population: A reclassification of an earlier study. International Journal of Eating Disorders, 7(3), 393-397.

Williams, R.L., Schaefer, C.A., Shisslak, C.M., Gronwaldt, V.H., & Comeri, G.D. (1986). Eating attitudes and behaviours in adolescent women: Discrimination of normals, dieters, and suspected bulimics using the eating attitudes test and eating disorder inventory. International Journal of Eating Disorders, 5(5), 879-894.

Woods, W.P., & Heretick, D.M.L. (1983). Self-schemata in anorexia and obesity. Imagination, Cognition and Personality, 3(1), 31-48.

Yapko, M.D. (1986). Hypnotic and strategic interventions in the treatment of anorexia nervosa. American Journal of Clinical Hypnosis, 28(4), 224-232.

Yates, A., Leehey, K., & Shisslak, C.M. (1983). Running-an analogue of anorexia? New England Journal of Medicine, 308, 251-255.

Zucker, P., Avener, J., Bayder, S., et al. (1985 November). Eating disorders in young athletes. The Physician and Sportsmedicine, 13, 88-106.

APPENDICES

APPENDIX A

Diagnostic Criteria for Anorexia Nervosa and Bulimia

FEIGHNER CRITERIA FOR ANOREXIA NERVOSA

A. Age at onset prior to 25.

B. Anorexia with accompanying weight loss of at least 25% of original body weight.

C. A distorted, implacable attitude toward eating, food, or weight that overrides hunger, admonitions, reassurance, and threats: e.g. (1) denial of illness with a failure to recognize nutritional needs; (2) apparent enjoyment in losing weight with overt manifestation that food refusal is a pleasurable indulgence; (3) a desired body image of extreme thinness with overt evidence that it is rewarding to the patient to achieve and maintain this state; and (4) unusual hoarding or handling of food.

D. No known medical illness that could account for the anorexia and weight loss.

E. No other known psychiatric disorder with particular reference to primary affective disorders, schizophrenia, obsessive-compulsive and phobic neuroses. (The assumption is made that even though it may appear phobic or obsessional, food refusal alone is not sufficient to qualify for obsessive-compulsive or phobic disease.)

F. At least 2 of the following manifestations: (1) amenorrhea, (2) lanugo, (3) bradycardia (persistent resting pulse of 60 or less), (4) periods of overactivity, (5) episodes of bulimia, (6) vomiting (may be self-induced).

DSM-III DIAGNOSTIC CRITERIA FOR ANOREXIA NERVOSA

A. Intense fear of becoming obese, which does not diminish as weight loss progresses.

B. Disturbance of body image, e.g. claiming to "feel fat" even when emaciated.

C. Weight loss of at least 25% of original body weight or, if under 18 years of age, weight loss from original body weight plus projected weight gain expected from growth charts may be combined to make the 25%.

D. Refusal to maintain body weight over a minimum normal weight for age and height.

E. No known physical illness that would account for the weight loss.

RUSSELL CRITERIA FOR ANOREXIA NERVOSA

1. Self-induced loss of weight (resulting mainly from the studied avoidance of foods considered by the patient to be fattening).

2. A characteristic psychopathology consisting of an overvalued idea that fatness is a dreadful state.

3. A specific endocrine disorder which in the postpubertal girl causes the cessation of menstruation, or a delay of events of puberty in the prepubertal or early pubertal female.

DSM-III DIAGNOSTIC CRITERIA FOR BULIMIA

A. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discreet period of time, usually less than 2 h).

B. At least three of the following:
   1. Consumption of high-caloric, easily ingested food during a binge.
   2. Inconspicuous eating during a binge.
   3. Termination of such eating episodes by abdominal pain, sleep, social interruption or self-induced vomiting.
   4. Repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or use of cathartics or diuretics.
   5. Frequent weight fluctuations greater than 10 pounds due to alternating binges and fasts.

C. Awareness that the eating pattern is abnormal and fear of not being able to stop eating voluntarily.

D. Depressed mood and self-deprecating thoughts following eating binges.

E. The bulimic episodes are not due to anorexia nervosa or any known physical disorder.

RUSSELL'S DIAGNOSTIC CRITERIA FOR BULIMIA NERVOSA

Bulimia nervosa - original criteria (Russell, 1979).

1. The patients suffer from powerful and intractable urges to overeat;
2. They seek to avoid the "fattening" effects of food by inducing vomiting or abusing purgatives or both;
3. They have a morbid fear of becoming fat.

Bulimia nervosa - revised criteria (Russell, 1983).

1. Preoccupations with food, irresistible cravings for food and repeated episodes of overeating.
2. Devices aimed at counteracting the "fattening" effects of food.
3. A psychopathology resembling that of classical anorexia nervosa.
4. A previous overt or cryptic episode of anorexia nervosa.

APPENDIX B

Data Collection Package

Dear Athlete,

My name is Dexa Stoutjesdyk. I am a graduate student in Education Psychology at the University of Alberta. My main area of interest is sports psychology (I myself am a competitive rower and coach).

The focus of my thesis research is on the eating attitudes of high performance athletes in various types of sports. As athletes I am sure you are aware of the importance placed on being lean and having a low fat to muscle ratio for optimal athletic performance. This pressure to be lean that many athletes impose on themselves or experience from others can sometimes lead to various difficulties or concerns surrounding food and weight. As a lightweight rower I have seen the various effects that the pressure to be a certain weight can have on teammates and myself.

In order to study the eating attitudes of athletes in various sports I am asking athletes like yourselves to fill out two short questionnaires. The questionnaires will take approximately 5 to 10 minutes each to complete. No names will be used and individual anonymity will be completely protected. If you are willing to do this then I would like to stress that it is very important that you are objective and honest with yourself as well as on the questionnaire in order for the results to be a true representation of athlete's eating habits and attitudes.

This study may help us determine the various degrees to which athletes are experiencing pressure in the area of food and weight. To ensure complete confidentiality you are supplied with a brown envelope to put your questionnaires into and then seal before handing it to whoever is in charge.

Thank you in advance for your time and cooperation.

PLEASE CAREFULLY FILL OUT ALL OF THE FOLLOWING INFORMATION

University that you are attending:____
Club you belong to:____

Sex:

Female: ___
Male: ___

Age (years)

check one of the following:
16 or less: ___
17 - 20 yrs: ___
21 - 24 yrs: ___
25 - 28 yrs: ___
29 or over: ___

Present Occupation:

Full time university student (registered this term in 3 or more courses): ___
Part-time university student (registered this term in less than 3 courses): ___
Technical Institute student: ___
High school student: ___
Part-time High school student: ___
Other ___

Sport (please check one of the following):

Lightweight rowing: ___
Heavyweight rowing: ___
Gymnastics: ___
Volleyball: ___
Diving: ___
Judo (weight classes): ___
Judo (open class): ___

Average expected hours of training per week:

	In Competitive Season	Out of Competitive season
0 - 5 hrs:	___	___
6 - 10 hrs:	___	___
11 -15 hrs:	___	___
16 - 20 hrs:	___	___
21 -25 hrs:	___	___
26 or more:	___	___

Number of years you have been training and/or competing in present sport? ____

Competition Experience(please check one or more if applicable):

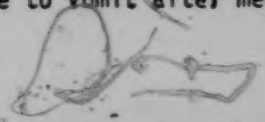
Have competed at local level (eg:City Championship): ___
Have competed at Provincial level (eg:Alberta Championships): ___
Have Competed at National level (eg:CIAUs): ___
Have competed at International level: ___

INSTRUCTIONS

Please place an (X) under the column which applies best to each of the numbered statements. Most of the questions directly relate to food or eating, although other types of questions have been included. Please answer each question carefully. Thank you.

ALWAYS	VERY OFTEN	OFTEN	SOMETIMES	RARELY	NEVER	
( )	( )	( )	( )	( )	( )	1. Like eating with other people.
( )	( )	( )	( )	( )	( )	2. Prepare foods for others but do not eat what I cook.
( )	( )	( )	( )	( )	( )	3. Become anxious prior to eating.
( )	( )	( )	( )	( )	( )	4. Am terrified about being overweight.
( )	( )	( )	( )	( )	( )	5. Avoid eating when I am hungry.
( )	( )	( )	( )	( )	( )	6. Find myself preoccupied with food.
( )	( )	( )	( )	( )	( )	7. Have gone on eating binges where I feel that I may not be able to stop.
( )	( )	( )	( )	( )	( )	8. Cut my food into small pieces.
( )	( )	( )	( )	( )	( )	9. Aware of the calorie content of foods that I eat.
( )	( )	( )	( )	( )	( )	10. Particularly avoid foods with a high carbohydrate content (e.g. bread, potatoes, rice, etc.).
( )	( )	( )	( )	( )	( )	11. Feel bloated after meals.
( )	( )	( )	( )	( )	( )	12. Feel that others would prefer if I ate more.
( )	( )	( )	( )	( )	( )	13. Vomit after I have eaten.
( )	( )	( )	( )	( )	( )	14. Feel extremely guilty after eating.
( )	( )	( )	( )	( )	( )	15. Am preoccupied with a desire to be thinner.
( )	( )	( )	( )	( )	( )	16. Exercise strenuously to burn off calories.

ALWAYS	VERY OFTEN	OFTEN	SOMETIMES	RARELY	NEVER		
( )	( )	( )	( )	( )	( )	17.	Weigh myself several times a day.
( )	( )	( )	( )	( )	( )	18.	Like my clothes to fit tightly.
( )	( )	( )	( )	( )	( )	19.	Enjoy eating meat.
( )	( )	( )	( )	( )	( )	20.	Wake up early in the morning.
( )	( )	( )	( )	( )	( )	21.	Eat the same foods day after day.
( )	( )	( )	( )	( )	( )	22.	Think about burning up calories when I exercise.
( )	( )	( )	( )	( )	( )	23.	Have regular menstrual periods.
( )	( )	( )	( )	( )	( )	24.	Other people think that I am too thin.
( )	( )	( )	( )	( )	( )	25.	Am preoccupied with the thought of having fat on my body.
( )	( )	( )	( )	( )	( )	26.	Take longer than others to eat my meals.
( )	( )	( )	( )	( )	( )	27.	Enjoy eating at restaurants.
( )	( )	( )	( )	( )	( )	28.	Take laxatives.
( )	( )	( )	( )	( )	( )	29.	Avoid foods with sugar in them.
( )	( )	( )	( )	( )	( )	30.	Eat diet foods.
( )	( )	( )	( )	( )	( )	31.	Feel that food controls my life.
( )	( )	( )	( )	( )	( )	32.	Display self control around food.
( )	( )	( )	( )	( )	( )	33.	Feel that others pressure me to eat.
( )	( )	( )	( )	( )	( )	34.	Give too much time and thought to food.
( )	( )	( )	( )	( )	( )	35.	Suffer from constipation.
( )	( )	( )	( )	( )	( )	36.	Feel uncomfortable after eating sweets.
( )	( )	( )	( )	( )	( )	37.	Engage in dieting behaviour.
( )	( )	( )	( )	( )	( )	38.	Like my stomach to be empty.
( )	( )	( )	( )	( )	( )	39.	Enjoy trying new rich foods.
( )	( )	( )	( )	( )	( )	40.	Have the impulse to vomit after meals.



MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PSYCHIATRY • WEST FEE HALL EAST LANSING • MICHIGAN 48824-1316

January 31, 1990

Dexa Stoutjesdyk
#1503,8315,105 Street
Edmonton, Alberta
Canada T6E 4H4

Dear Mr. Stoutjesdyk:

I am writing to provide you with permission to use the Eating Attitudes Test in the appendix of your thesis. I have also forwarded information about how you can contact Psychological Assessment Resources to obtain permission to copy the EDI for your appendix. Psychological Assessment Resources holds the copyright for the EDI. You can write to them at the following address:

Dr. Bob Smith
President
Psychological Assessment Resources
P. O. Box 998
Odessa, FL 33556

The title of your thesis sounds very interesting, and I would be delighted if you could send a copy of the abstract or a summary of your findings. We are conducting a number of studies at MSU on high performance athletes, and your findings would be very helpful in our review of the literature.

Yours sincerely,

David M. Garner, Ph.D.
Professor

DMG/bjr

MSU is an Affirmative Action/Equal Opportunity Institution

Adapted and reproduced by special permission of Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, Florida 33549, from the Eating Disorder Inventory, by Garner, Olmstead, Polivy, Copyright, 1984 by Psychological Assessment Resources, Inc. Further reproduction is prohibited without prior permission from PAR, Inc.

Instructions: This is a scale which measures a variety of attitudes, feelings and behaviours. Some of the items relate to food and eating. Others ask you about your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and place an (X) under the column which applies best for you. Please answer each question very carefully. Thank you.

Always	Usually	Often	Sometimes	Rarely	Never	
( )	( )	( )	( )	( )	( )	1. I eat sweets and carbohydrates without feeling nervous.
( )	( )	( )	( )	( )	( )	2. I think that my stomach is too big.
( )	( )	( )	( )	( )	( )	3. I wish that I could return to the security of childhood.
( )	( )	( )	( )	( )	( )	4. I eat when I am upset.
( )	( )	( )	( )	( )	( )	5. I stuff myself with food.
( )	( )	( )	( )	( )	( )	6. I wish that I could be younger.
( )	( )	( )	( )	( )	( )	7. I think about dieting.

(Continued on next page).

APPENDIX. (Continued)

Always	Usually	Often	Sometimes	Rarely	Never	
( )	( )	( )	( )	( )	( )	8. I get frightened when my feelings are too strong.
( )	( )	( )	( )	( )	( )	9. I think that my thighs are too large.
( )	( )	( )	( )	( )	( )	10. I feel ineffective as a person.
( )	( )	( )	( )	( )	( )	11. I feel extremely guilty after overeating.
( )	( )	( )	( )	( )	( )	12. I think that my stomach is just the right size.
( )	( )	( )	( )	( )	( )	13. Only outstanding performance is good enough in my family.
( )	( )	( )	( )	( )	( )	14. The happiest time in life is when you are a child.
( )	( )	( )	( )	( )	( )	15. I am open about my feelings.
( )	( )	( )	( )	( )	( )	16. I am terrified of gaining weight.
( )	( )	( )	( )	( )	( )	17. I trust others.
( )	( )	( )	( )	( )	( )	18. I feel alone in the world.
( )	( )	( )	( )	( )	( )	19. I feel satisfied with the shape of my body.
( )	( )	( )	( )	( )	( )	20. I feel generally in control of things in my life.
( )	( )	( )	( )	( )	( )	21. I get confused about what emotion I am feeling.
( )	( )	( )	( )	( )	( )	22. I would rather be an adult than a child.
( )	( )	( )	( )	( )	( )	23. I can communicate with others easily.
( )	( )	( )	( )	( )	( )	24. I wish I were someone else.
( )	( )	( )	( )	( )	( )	25. I exaggerate or magnify the importance of weight.
( )	( )	( )	( )	( )	( )	26. I can clearly identify what emotion I am feeling.
( )	( )	( )	( )	( )	( )	27. I feel inadequate.
( )	( )	( )	( )	( )	( )	28. I have gone on eating binges where I have felt that I could not stop.
( )	( )	( )	( )	( )	( )	29. As a child, I tried very hard to avoid disappointing my parents and teachers.
( )	( )	( )	( )	( )	( )	30. I have close relationships.
( )	( )	( )	( )	( )	( )	31. I like the shape of my buttocks.
( )	( )	( )	( )	( )	( )	32. I am preoccupied with the desire to be thinner.
( )	( )	( )	( )	( )	( )	33. I don't know what's going on inside me.

APPENDIX. (Continued)

Always	Usually	Often	Sometimes	Rarely	Never	
( )	( )	( )	( )	( )	( )	34. I have trouble expressing my emotions to others.
( )	( )	( )	( )	( )	( )	35. The demands of adulthood are too great.
( )	( )	( )	( )	( )	( )	36. I hate being less than best at things.
( )	( )	( )	( )	( )	( )	37. I feel secure about myself.
( )	( )	( )	( )	( )	( )	38. I think about bingeing (overeating).
( )	( )	( )	( )	( )	( )	39. I feel happy that I am not a child anymore.
( )	( )	( )	( )	( )	( )	40. I get confused as to whether or not I am hungry.
( )	( )	( )	( )	( )	( )	41. I have a low opinion of myself.
( )	( )	( )	( )	( )	( )	42. I feel that I can achieve my standards.
( )	( )	( )	( )	( )	( )	43. My parents have expected excellence of me.
( )	( )	( )	( )	( )	( )	44. I worry that my feelings will get out of control.
( )	( )	( )	( )	( )	( )	45. I think that my hips are too big.
( )	( )	( )	( )	( )	( )	46. I eat moderately in front of others and stuff myself when they're gone.
( )	( )	( )	( )	( )	( )	47. I feel bloated after eating a normal meal.
( )	( )	( )	( )	( )	( )	48. I feel that people are happiest when they are children.
( )	( )	( )	( )	( )	( )	49. If I gain a pound, I worry that I will keep gaining.
( )	( )	( )	( )	( )	( )	50. I feel that I am a worthwhile person.
( )	( )	( )	( )	( )	( )	51. When I am upset, I don't know if I am sad, frightened or angry.
( )	( )	( )	( )	( )	( )	52. I feel that I must do things perfectly, or not do them at all.
( )	( )	( )	( )	( )	( )	53. I have the thought of trying to vomit in order to lose weight.
( )	( )	( )	( )	( )	( )	54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).
( )	( )	( )	( )	( )	( )	55. I think that my thighs are just the right size.
( )	( )	( )	( )	( )	( )	56. I feel empty inside (emotionally).

(Continued on next page)

APPENDIX. (Continued)

Always	Usually	Often	Sometimes	Rarely	Never	
( )	( )	( )	( )	( )	( )	57. I can talk about personal thoughts or feelings.
( )	( )	( )	( )	( )	( )	58. The best years of your life are when you become an adult.
( )	( )	( )	( )	( )	( )	59. I think that my buttocks are too large.
( )	( )	( )	( )	( )	( )	60. I have feelings I can't quite identify.
( )	( )	( )	( )	( )	( )	61. I eat or drink in secrecy.
( )	( )	( )	( )	( )	( )	62. I think that my hips are just the right size.
( )	( )	( )	( )	( )	( )	63. I have extremely high goals.
( )	( )	( )	( )	( )	( )	64. When I am upset, I worry that I will start eating.

APPENDIX C

Cross Tabulation Tables

CODE SHEET

UNIVERSITY	CODE
University of Alberta	1
University of British Columbia	2
University of Calgary	3
University of Lethbridge	4
University of Manitoba	5
McGill University	6
Queen's University	7
University of Saskatchewan	8
University of Toronto	9
Trent University	10
University of Victoria	11
University of Waterloo	12
University of Western Ontario	13
York University	14
Takugawa	15
Hiro Judo Club	16
Ishiyama Judo Club	17
None	18
McMaster University	19
Universite de Quebec a Trois Rivieres	20
University of Alabama	21
University of Montreal	22
Michigan University	23
Prince George Judo Club	24
University of Moncton	25
Other	26

INSEASON (Hours of Training/Week)	CODE
0- 5 hrs	1
6-10 hrs	2
11-15 hrs	3
16-20 hrs	4
21-25 hrs	5
26 or more	6

COMPETE (Level of competition experience)	CODE
Provincial Only	1.00
National	2.00
International	3.00

SPORT	CODE
Lightweight Rowing	1
Heavyweight Rowing	2
Gymnastics	3
Volleyball	4
Diving	5
Judo (weight classes)	6
Judo (open class)	7

GENDER	CODE
Female	1
Male	2

EAT (scores)	CODE
0-10	1.00
11-20	2.00
21-29	3.00
30 and above	4.00

EAT — CROSSTABULATION OF — BY SPORT

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	SPORT 1	2	3	4	5	6	ROW TOTAL
1.00		9	20	12	30	11	6	88
		16.1	18.9	12.9	23.0	8.3	8.8	46.1%
		10.2%	22.7%	13.6%	34.1%	12.5%	6.8%	
		25.7%	48.8%	42.9%	60.0%	61.1%	31.6%	
		4.7%	10.5%	6.3%	15.7%	5.8%	3.1%	
2.00		12	13	10	14	3	10	62
		11.4	13.3	9.1	16.2	5.8	6.2	32.5%
		19.4%	21.0%	16.1%	22.6%	4.8%	16.1%	
		34.3%	31.7%	35.7%	28.0%	16.7%	52.6%	
		6.3%	6.8	5.2%	7.3%	1.6%	5.2%	
3.00		11	5	3	4	2	1	26
		4.8	5.6	3.8	6.8	2.5	2.6	13.6%
		42.3%	19.2%	11.5%	15.4%	7.7%	3.8%	
		31.4%	12.2%	10.7%	8.0%	11.1%	5.3%	
		5.8%	2.6%	1.6%	2.1%	1.0%	.5%	
4.00		3	3	3	2	2	2	15
		2.7	3.2	2.2	3.9	1.4	1.5	7.9%
		20.0%	20.0%	20.0%	13.3%	13.3%	13.3%	
		8.6%	7.3%	10.7%	4.0%	11.1%	10.5%	
		1.6%	1.6%	1.6%	1.0%	1.0%	1.0%	
COLUMN TOTAL		35	41	28	50	18	19	191
		18.3%	21.5%	14.7%	26.2%	9.4%	9.9%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F	CELLS WITH E.F. < 5
23.63553	15	0.0715	1.414	10 OF 24 (41.7%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

CROSSTABULATION OF EAT BY INSEASON

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	INSEASON 3	4	5	6	ROW TOTAL
1.00		34	30	15	9	88
		33.2	33.2	11.5	10.1	46.1%
		38.6%	34.1%	17.0%	10.2%	
		47.2%	41.7%	60.0%	40.9%	
		17.8%	15.7%	7.9%	4.7%	
2.00		24	27	6	5	62
		23.4	23.4	8.1	7.1	32.5%
		38.7%	43.5%	9.7%	8.1%	
		33.3%	37.5%	24.0%	22.7%	
		12.6%	14.1%	3.1%	2.6%	
3.00		10	8	2	6	26
		9.8	9.8	3.4	3.0	13.6%
		38.5%	30.8%	7.7%	23.1%	
		13.9%	11.1%	8.0%	27.3%	
		5.2%	4.2%	1.0%	3.1%	
4.00		4	7	2	2	15
		5.7	5.7	2.0	1.7	7.9%
		26.7%	46.7%	13.3%	13.3%	
		5.6%	9.7%	8.0%	9.1%	
		2.1%	3.7%	1.0%	1.0%	
COLUMN TOTAL		72	72	25	22	191
		37.7%	37.7%	13.1%	11.5%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
8.05453	9	0.5287	1.728	4 OF 16 (25.0%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

EAT — CROSSTABULATION OF BY COMPETE

PAGE 1 OF 1

EAT	COMPETE 1.00	2.00	3.00	ROW TOTAL
1.00	13	45	30	88
	16.1	41.9	29.9	46.1%
	14.8%	51.1%	34.1%	
	37.1%	49.5%	46.2%	
	6.8%	23.6%	15.7%	
2.00	15	27	20	62
	11.4	29.5	21.1	32.5%
	24.2%	43.5%	32.3%	
	42.9%	29.7%	30.8%	
	7.9%	14.1%	10.5%	
3.00	7	9	10	26
	4.8	12.4	8.8	13.6%
	26.9%	34.6%	38.5%	
	20.0%	9.9%	15.4%	
	3.7%	4.7%	5.2%	
4.00	0	10	5	15
	2.7	7.1	5.1	7.9%
	.0%	66.7%	33.3%	
	.0%	11.0%	7.7%	
	.0%	5.2%	2.6%	
COLUMN TOTAL	35	91	65	191
	18.3%	47.6%	34.0%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
8.28757	6	0.2178	2.749	2 OF 12 (16.7%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

CROSSTABULATION OF EAT BY UNIV

PAGE 1 OF 3

EAT		UNIV 1	2	3	4	5	6	7	8	9	10	ROW TOTAL
1.00	COUNT	10	10	2	3	3	7	2	7	13	1	87
	EXP VAL	10.5	8.7	1.8	1.4	5.0	10.5	2.3	4.6	11.9	9	45.8%
	ROW PCT	11.5%	11.5%	2.3%	3.4%	3.4%	8.0%	2.3%	8.0%	14.9%	1.1%	
	COL PCT	43.5%	52.6%	50.0%	100.0%	27.3%	30.4%	40.0%	70.0%	50.0%	50.0%	
	TOT PCT	5.3%	5.3%	1.1%	1.6%	1.6%	3.7%	1.1%	3.7%	6.8%	5%	
2.00	COUNT	7	3	2	0	5	12	3	2	6	0	62
	EXP VAL	7.5	6.2	1.3	1.0	3.6	7.5	1.6	3.3	8.5	7	32.6%
	ROW PCT	11.3%	4.8%	3.2%	.0%	8.1%	19.4%	4.8%	3.2%	9.7%	.0%	
	COL PCT	30.4%	15.8%	50.0%	.0%	45.5%	52.2%	60.0%	20.0%	23.1%	.0%	
	TOT PCT	3.7%	1.6%	1.1%	.0%	2.6%	6.3%	1.6%	1.1%	3.2%	.0%	
3.00	COUNT	2	3	0	0	2	3	0	1	5	1	26
	EXP VAL	3.1	2.6	.5	.4	1.5	3.1	.7	1.4	3.6	3	13.7%
	ROW PCT	7.7%	11.5%	.0%	.0%	7.7%	11.5%	.0%	3.8%	19.2%	3.8%	
	COL PCT	8.7%	15.8%	.0%	.0%	18.2%	13.0%	.0%	10.0%	19.2%	50.0%	
	TOT PCT	1.1%	1.6%	.0%	.0%	1.1%	1.6%	.0%	.5%	2.6%	.5%	
4.00	COUNT	4	3	0	0	1	1	0	0	2	0	15
	EXP VAL	1.8	1.5	.3	.2	.9	1.8	.4	.8	2.1	.2	7.9%
	ROW PCT	26.7%	20.0%	.0%	.0%	6.7%	6.7%	.0%	.0%	13.3%	.0%	
	COL PCT	17.4%	15.8%	.0%	.0%	9.1%	4.3%	.0%	.0%	7.7%	.0%	
	TOT PCT	2.1%	1.6%	.0%	.0%	.5%	.5%	.0%	.0%	1.1%	.0%	
(CONTINUED)	COLUMN TOTAL	23	19	4	3	11	23	5	10	26	2	190
		12.1%	10.0%	2.1%	1.6%	5.8%	12.1%	2.6%	5.3%	13.7%	1.1%	100.0%

University of Alberta

CROSSTABULATION OF EAT BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 11	12	13	14	16	17	18	19	21	22	ROW TOTAL
1.00		10	1	4	7	1	0	2	1	0	1	87
		7.3	1.4	7.8	4.6	.5	.5	2.7	.5	.5	.5	45.8%
		11.5%	1.1%	4.6%	8.0%	1.1%	.0%	2.3%	1.1%	.0%	1.1%	
		62.5%	33.3%	23.5%	70.0%	100.0%	.0%	33.3%	100.0%	.0%	100.0%	
		5.3%	.5%	2.1%	3.7%	.5%	.0%	1.1%	.5%	.0%	.5%	
2.00		3	2	7	2	0	1	3	0	1	0	62
		5.2	1.0	5.5	3.3	.3	.3	2.0	.3	.3	.3	32.6%
		4.8%	3.2%	11.3%	3.2%	.0%	1.6%	4.8%	.0%	1.6%	.0%	
		18.8%	66.7%	41.2%	20.0%	.0%	100.0%	50.0%	.0%	100.0%	.0%	
		1.6%	1.1%	3.7%	1.1%	.0%	.5%	1.6%	.0%	.5%	.0%	
3.00		2	0	5	0	0	0	1	0	0	0	26
		2.2	.4	2.3	1.4	.1	.1	.8	.1	.1	.1	13.7%
		7.7%	.0%	19.2%	.0%	.0%	.0%	3.8%	.0%	.0%	.0%	
		12.5%	.0%	29.4%	.0%	.0%	.0%	16.7%	.0%	.0%	.0%	
		1.1%	.0%	2.6%	.0%	.0%	.0%	.5%	.0%	.0%	.0%	
4.00		1	0	1	1	0	0	0	0	0	0	15
		1.3	.2	1.3	.8	.1	.1	.5	.1	.1	.1	7.9%
		6.7%	.0%	6.7%	6.7%	.0%	.0%	.0%	.0%	.0%	.0%	
		6.3%	.0%	5.9%	10.0%	.0%	.0%	.0%	.0%	.0%	.0%	
		.5%	.0%	.5%	.5%	.0%	.0%	.0%	.0%	.0%	.0%	
(CONTINUED)	COLUMN TOTAL	16	3	17	10	1	1	6	1	1	1	190
		8.4%	1.6%	8.9%	5.3%	.5%	.5%	3.2%	.5%	.5%	.5%	100.0%

University of Alberta

CROSSTABULATION OF EAT BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 23	24	25	26	ROW TOTAL
1.00		1 .5 1.1% 100.0% .5%	1 .5 1.1% 100.0% .5%	0 .5 .0% .0% .0%	0 1.8 .0% .0% .0%	87 45.8%
2.00		0 .3 .0% .0% .0%	0 .3 .0% .0% .0%	0 .3 .0% .0% .0%	3 1.3 4.8% 75.0% 1.6%	62 32.6%
3.00		0 .1 .0% .0% .0%	0 .1 .0% .0% .0%	0 .1 .0% .0% .0%	1 .5 3.8% 25.0% .5%	26 13.7%
4.00		0 .1 .0% .0% .0%	0 .1 .0% .0% .0%	1 .1 6.7% 100.0% .5%	0 .3 .0% .0% .0%	15 7.9%
COLUMN TOTAL		1 .5%	1 .5%	1 .5%	4 2.1%	190 100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
66.29229	69	0.5701	0.079	83 OF 96 (86.5%)

NUMBER OF MISSING OBSERVATIONS = 2

University of Alberta

GENDER: 1

CROSSTABULATION OF EAT BY SPORT

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	SPORT 1	2	3	4	5	6	ROW TOTAL
1.00		4	5	6	17	3	2	37
		7.8	6.4	6.0	10.0	3.2	3.6	35.6%
		10.8%	13.5%	16.2%	45.9%	8.1%	5.4%	
		18.2%	27.8%	35.3%	60.7%	33.3%	20.0%	
		3.8%	4.8%	5.8%	16.3%	2.9%	1.9%	
2.00		6	8	6	6	2	6	34
		7.2	5.9	5.6	9.2	2.9	3.3	32.7%
		17.6%	23.5%	17.6%	17.6%	5.9%	17.6%	
		27.3%	44.4%	35.3%	21.4%	22.2%	60.0%	
		5.8%	7.7%	5.8%	5.8%	1.9%	5.8%	
3.00		10	3	2	4	2	1	22
		4.7	3.8	3.6	5.9	1.9	2.1	21.2%
		45.5%	13.6%	9.1%	18.2%	9.1%	4.5%	
		45.5%	16.7%	11.8%	14.3%	22.2%	10.0%	
		9.6%	2.9%	1.9%	3.8%	1.9%	1.0%	
4.00		2	2	3	1	2	1	11
		2.3	1.9	1.8	3.0	1.0	1.1	10.6%
		18.2%	18.2%	27.3%	9.1%	18.2%	9.1%	
		9.1%	11.1%	17.6%	3.6%	22.2%	10.0%	
		1.9%	1.9%	2.9%	1.0%	1.9%	1.0%	
COLUMN TOTAL		22	18	17	28	9	10	104
		21.2%	17.3%	16.3%	26.9%	8.7%	9.6%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
24.05891	15	0.0641	0.952	15 OF 24 (62.5%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

GENDER: 1

CROSSTABULATION OF
EAT BY INSEASON
PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	INSEASON 3	4	5	6	ROW TOTAL
1.00		14	16	5	2	37
		14.2	16.0	3.2	3.6	35.6%
		37.8%	43.2%	13.5%	5.4%	
		35.0%	35.6%	55.6%	20.0%	
		13.5%	15.4%	4.8%	1.9%	
2.00		13	16	2	3	34
		13.1	14.7	2.9	3.3	32.7%
		38.2%	47.1%	5.9%	8.8%	
		32.5%	35.6%	22.2%	30.0%	
		12.5%	15.4%	1.9%	2.9%	
3.00		10	8	1	3	22
		8.5	9.5	1.9	2.1	21.2%
		45.5%	36.4%	4.5%	13.6%	
		25.0%	17.8%	11.1%	30.0%	
		9.6%	7.7%	1.0%	2.9%	
4.00		3	5	1	2	11
		4.2	4.8	1.0	1.1	10.6%
		27.3%	45.5%	9.1%	18.2%	
		7.5%	11.1%	11.1%	20.0%	
		2.9%	4.8%	1.0%	1.9%	
COLUMN TOTAL		40	45	9	10	104
		38.5%	43.3%	8.7%	9.6%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
4.66608	9	0.8624	0.952	10 OF 16 (62.5%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

GENDER: 1

CROSSTABULATION OF EAT BY COMPETE

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	COMPETE 1.00	2.00	3.00	ROW TOTAL
1.00		4	21	12	37
		7.1	17.4	12.5	35.6%
		10.8%	56.8%	32.4%	
		20.0%	42.9%	34.3%	
		3.8%	20.2%	11.5%	
2.00		10	12	12	34
		6.5	16.0	11.4	32.7%
		29.4%	35.3%	35.3%	
		50.0%	24.5%	34.3%	
		9.6%	11.5%	11.5%	
3.00		6	9	7	22
		4.2	10.4	7.4	21.2%
		27.3%	40.9%	31.8%	
		30.0%	18.4%	20.0%	
		5.8%	8.7%	6.7%	
4.00		0	7	4	11
		2.1	5.2	3.7	10.6%
		.0%	63.6%	36.4%	
		.0%	14.3%	11.4%	
		.0%	6.7%	3.8%	
COLUMN TOTAL		20	49	35	104
		19.2%	47.1%	33.7%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
8.69698	6	0.1914	2.115	3 OF 12 (25.0%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

GENDER: 1

CROSSTABULATION OF EAT BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 1	2	3	5	6	7	8	9	10	11	ROW TOTAL
1.00		5	9	1	2	1	0	3	7	1	1	36
		5.2	6.3	.7	1.4	3.5	.7	1.7	5.2	.3	1.7	35.0%
		13.9%	25.0%	2.8%	5.6%	2.8%	.0%	8.3%	19.4%	2.8%	2.8%	
		33.3%	50.0%	50.0%	50.0%	10.0%	.0%	60.0%	46.7%	100.0%	20.0%	
		4.9%	8.7%	1.0%	1.9%	1.0%	.0%	2.9%	6.8%	1.0%	1.0%	
2.00		5	3	1	0	6	2	1	2	0	2	34
		5.0	5.9	.7	1.3	3.3	7	1.7	5.0	.3	1.7	33.0%
		14.7%	8.8%	2.9%	.0%	17.6%	5.9%	2.9%	5.9%	.0%	5.9%	
		33.3%	16.7%	50.0%	.0%	60.0%	100.0%	20.0%	13.3%	.0%	40.0%	
		4.9%	2.9%	1.0%	.0%	5.8%	1.9%	1.0%	1.9%	.0%	1.9%	
3.00		2	3	0	1	3	0	1	5	0	1	22
		3.2	3.8	.4	.9	2.1	.4	1.1	3.2	.2	1.1	21.4%
		9.1%	13.6%	.0%	4.5%	13.6%	.0%	4.5%	22.7%	.0%	4.5%	
		13.3%	16.7%	.0%	25.0%	30.0%	.0%	20.0%	33.3%	.0%	20.0%	
		1.9%	2.9%	.0%	1.0%	2.9%	.0%	1.0%	4.9%	.0%	1.0%	
4.00		3	3	0	1	0	0	0	1	0	1	11
		1.6	1.9	.2	.4	1.1	.2	.5	1.6	.1	.5	10.7%
		27.3%	27.3%	.0%	9.1%	.0%	.0%	.0%	9.1%	.0%	9.1%	
		20.0%	16.7%	.0%	25.0%	.0%	.0%	.0%	6.7%	.0%	20.0%	
		2.9%	2.9%	.0%	1.0%	.0%	.0%	.0%	1.0%	.0%	1.0%	
(CONTINUED)	COLUMN TOTAL	15	18	2	4	10	2	5	15	1	5	103
		14.6%	17.5%	1.9%	3.9%	9.7%	1.9%	4.9%	14.6%	1.0%	4.9%	100.0%

University of Alberta

GENDER: 1

CROSSTABULATION OF EAT BY UNIV

PAGE 2 OF 2

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 12	13	14	16	18	24	25	26	ROW TOTAL
1.00		0	3	1	1	0	1	0	0	36
		.3	4.9	.3	.3	1.0	.3	.3	1.4	35.0%
		.0%	8.3%	2.8%	2.8%	.0%	2.8%	.0%	.0%	
		.0%	21.4%	100.0%	100.0%	.0%	100.0%	.0%	.0%	
		.0%	2.9%	1.0%	1.0%	.0%	1.0%	.0%	.0%	
2.00		1	6	0	0	2	0	0	3	34
		.3	4.6	.3	.3	1.0	.3	.3	1.3	33.0%
		2.9%	17.6%	.0%	.0%	5.9%	.0%	.0%	8.8%	
		100.0%	42.9%	.0%	.0%	66.7%	.0%	.0%	75.0%	
		1.0%	5.8%	.0%	.0%	1.9%	.0%	.0%	2.9%	
3.00		0	4	0	0	1	0	0	1	22
		.2	3.0	.2	.2	.6	.2	.2	.9	21.4%
		.0%	18.2%	.0%	.0%	4.5%	.0%	.0%	4.5%	
		.0%	28.6%	.0%	.0%	33.3%	.0%	.0%	25.0%	
		.0%	3.9%	.0%	.0%	1.0%	.0%	.0%	1.0%	
4.00		0	1	0	0	0	0	1	0	11
		.1	1.5	.1	.1	.3	.1	.1	.4	10.7%
		.0%	9.1%	.0%	.0%	.0%	.0%	9.1%	.0%	
		.0%	7.1%	.0%	.0%	.0%	.0%	100.0%	.0%	
		.0%	1.0%	.0%	.0%	.0%	.0%	1.0%	.0%	
COLUMN TOTAL		1	14	1	1	3	1	1	4	103
		1.0%	13.6%	1.0%	1.0%	2.9%	1.0%	1.0%	3.9%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
50.02994	51	0.5122	0.107	68 OF 72 (94.4%)

NUMBER OF MISSING OBSERVATIONS = 2

University of Alberta

GENDER: 2

CROSSTABULATION OF EAT BY SPORT

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	SPORT 1	2	3	4	5	6	ROW TOTAL
1.00		5	15	6	13	8	4	51
		7.6	13.5	6.4	12.9	5.3	5.3	58.6%
		9.8%	29.4%	11.8%	25.5%	15.7%	7.8%	
		38.5%	65.2%	54.5%	59.1%	88.9%	44.4%	
		5.7%	17.2%	6.9%	14.9%	9.2%	4.6%	
2.00		6	5	4	8	1	4	28
		4.2	7.4	3.5	7.1	2.9	2.9	32.2%
		21.4%	17.9%	14.3%	28.6%	3.6%	14.3%	
		46.2%	21.7%	36.4%	36.4%	11.1%	44.4%	
		6.9%	5.7%	4.6%	9.2%	1.1%	4.6%	
3.00		1	2	1	0	0	0	4
		.6	1.1	.5	1.0	.4	.4	4.6%
		25.0%	50.0%	25.0%	.0%	.0%	.0%	
		7.7%	8.7%	9.1%	.0%	.0%	.0%	
		1.1%	2.3%	1.1%	.0%	.0%	.0%	
4.00		1	1	0	1	0	1	4
		.6	1.1	.5	1.0	.4	.4	4.6%
		25.0%	25.0%	.0%	25.0%	.0%	25.0%	
		7.7%	4.3%	.0%	4.5%	.0%	11.1%	
		1.1%	1.1%	.0%	1.1%	.0%	1.1%	
COLUMN TOTAL		13	23	11	22	9	9	87
		14.9%	26.4%	12.6%	25.3%	10.3%	10.3%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
11.68529	15	0.7027	0.414	16 OF 24 (66.7%)

NUMBER OF MISSING OBSERVATIONS = 0

University of Alberta

GENDER: 2

CROSSTABULATION OF EAT BY INSEASON

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	INSEASON 3	4	5	6	ROW TOTAL
1.00		20	14	10	7	51
		18.8	15.8	9.4	7.0	58.6%
		39.2%	27.5%	19.6%	13.7%	
		62.5%	51.9%	62.5%	58.3%	
		23.0%	16.1%	11.5%	8.0%	
2.00		11	11	4	2	28
		10.3	8.7	5.1	3.9	32.2%
		39.3%	39.3%	14.3%	7.1%	
		34.4%	40.7%	25.0%	16.7%	
		12.6%	12.6%	4.6%	2.3%	
3.00		0	0	1	3	4
		1.5	1.2	.7	.6	4.6%
		.0%	.0%	25.0%	75.0%	
		.0%	.0%	6.3%	25.0%	
		.0%	.0%	1.1%	3.4%	
4.00		1	2	1	0	4
		1.5	1.2	.7	.6	4.6%
		25.0%	50.0%	25.0%	.0%	
		3.1%	7.4%	6.3%	.0%	
		1.1%	2.3%	1.1%	.0%	
COLUMN TOTAL		32	27	16	12	87
		36.8%	31.0%	18.4%	13.8%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
17.08392	9	0.0474	0.552	9 OF 16 (56.3%)

NUMBER OF MISSING OBSERVATIONS = 0

University of Alberta

GENDER: 2

CROSSTABULATION OF EAT BY COMPETE

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	COMPETE 1.00	2.00	3.00	ROW TOTAL
1.00		9	24	18	51
		8.8	24.6	17.6	58.6%
		17.6%	47.1%	35.3%	
		60.0%	57.1%	60.0%	
		10.3%	27.6%	20.7%	
2.00		5	15	8	28
		4.8	13.5	9.7	32.2%
		17.9%	53.6%	28.6%	
		33.3%	35.7%	26.7%	
		5.7%	17.2%	9.2%	
3.00		1	0	3	4
		.7	1.9	1.4	4.6%
		25.0%	.0%	75.0%	
		6.7%	.0%	10.0%	
		1.1%	.0%	3.4%	
4.00		0	3	1	4
		.7	1.9	1.4	4.6%
		.0%	75.0%	25.0%	
		.0%	7.1%	3.3%	
		.0%	3.4%	1.1%	
COLUMN TOTAL		15 17.2%	42 48.3%	30 34.5%	87 100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
5.84352	6	0.4409	0.690	7 OF 12 (58.3%)

NUMBER OF MISSING OBSERVATIONS = 0

University of Alberta

GENDER: 2

EAT — CROSSTABULATION OF EAT BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 1	2	3	4	5	6	7	8	9	10	ROW TOTAL
1.00		5 4.7 9.8% 62.5% 5.7%	1 .6 2.0% 100.0% 1.1%	1 1.2 2.0% 50.0% 1.1%	3 1.8 5.9% 100.0% 3.4%	1 4.1 2.0% 14.3% 1.1%	6 7.6 11.8% 46.2% 6.9%	2 1.8 3.9% 66.7% 2.3%	4 2.9 7.8% 80.0% 4.6%	6 6.4 11.8% 54.5% 6.9%	0 6 .0% .0% .0%	51 58.6%
2.00		2 2.6 7.1% 25.0% 2.3%	0 .3 .0% .0% .0%	1 .6 3.6% 50.0% 1.1%	0 1.0 .0% .0% .0%	5 2.3 17.9% 71.4% 5.7%	6 4.2 21.4% 46.2% 6.9%	1 1.0 3.6% 33.3% 1.1%	1 1.6 3.6% 20.0% 1.1%	4 3.5 14.3% 36.4% 4.6%	0 .3 .0% .0% .0%	28 32.2%
3.00		0 .4 .0% .0% .0%	0 .0 .0% .0% .0%	0 .1 .0% .0% .0%	0 .1 .0% .0% .0%	1 .3 25.0% 14.3% 1.1%	0 .6 .0% .0% .0%	0 .1 .0% .0% .0%	0 .2 .0% .0% .0%	0 .5 .0% .0% .0%	1 .0 25.0% 100.0% 1.1%	4 4.6%
4.00		1 .4 25.0% 12.5% 1.1%	0 .0 .0% .0% .0%	0 .1 .0% .0% .0%	0 .1 .0% .0% .0%	0 .3 .0% .0% .0%	1 .6 25.0% 7.7% 1.1%	0 .1 .0% .0% .0%	0 .2 .0% .0% .0%	1 .5 25.0% 9.1% 1.1%	0 .0 .0% .0% .0%	4 4.6%
(CONTINUED)	COLUMN TOTAL	8 9.2%	1 1.1%	2 2.3%	3 3.4%	7 8.0%	13 14.9%	3 3.4%	5 5.7%	11 12.6%	1 1.1%	87 100.0%

University of Alberta

GENDER: 2

CROSSTABULATION OF EAT BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 11	12	13	14	17	18	19	21	22	23	ROW TOTAL
1.00		9	1	1	6	0	2	1	0	1	1	51
		6.4	1.2	1.8	5.3	6	1.8	6	.6	6	.6	58.6%
		17.6%	2.0%	2.0%	11.8%	.0%	3.9%	2.0%	.0%	2.0%	2.0%	
		81.8%	50.0%	33.3%	66.7%	0%	66.7%	100.0%	.0%	100.0%	100.0%	
		10.3%	1.1%	1.1%	6.9%	.0%	2.3%	1.1%	.0%	1.1%	1.1%	
2.00		1	1	1	2	1	1	0	1	0	0	28
		3.5	.6	1.0	2.9	3	1.0	.3	.3	.3	.3	32.2%
		3.6%	3.6%	3.6%	7.1%	3.6%	3.6%	.0%	3.6%	.0%	.0%	
		9.1%	50.0%	33.3%	22.2%	100.0%	33.3%	.0%	100.0%	.0%	.0%	
		1.1%	1.1%	1.1%	2.3%	1.1%	1.1%	.0%	1.1%	.0%	.0%	
3.00		1	0	1	0	0	0	0	0	0	0	4
		.5	.1	.1	.4	.0	.1	.0	.0	.0	.0	4.6%
		25.0%	.0%	25.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	
		9.1%	.0%	33.3%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	
		1.1%	.0%	1.1%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	
4.00		0	0	0	1	0	0	0	0	0	0	4
		.5	.1	.1	.4	.0	.1	.0	.0	.0	.0	4.6%
		.0%	.0%	.0%	25.0%	.0%	.0%	.0%	.0%	.0%	.0%	
		.0%	.0%	.0%	11.1%	.0%	.0%	.0%	.0%	.0%	.0%	
		.0%	.0%	.0%	1.1%	.0%	.0%	.0%	.0%	.0%	.0%	
COLUMN TOTAL		11	2	3	9	1	3	1	1	1	1	87
		12.6%	2.3%	3.4%	10.3%	1.1%	3.4%	1.1%	1.1%	1.1%	1.1%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
55.84799	57	0.5184	0.046	76 OF 80 (95.0%)

NUMBER OF MISSING OBSERVATIONS = 0

University of Alberta

INSEASON (Hours of Training/Week)	CODE
0- 5 hrs	1
6-10 hrs	2
11-15 hrs	3
16-20 hrs	4
21-25 hrs	5
26 or more	6

COMPETE (Level of competition experience)	CODE
Provincial Only	1.00
National	2.00
International	3.00

SPORT	CODE
Lightweight Rowing	1
Heavyweight Rowing	2
Gymnastics	3
Volleyball	4
Diving	5
Judo (weight classes)	6
Judo (open class)	7

GENDER	CODE
Female	1
Male	2

EAT (scores)	CODE
0-10	1.00
11-20	2.00
21-29	3.00
30 and above	4.00

EAT — CROSSTABULATION OF BY SPORT

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	SPORT 1	2	3	4	5	6	ROW TOTAL
1.00		9	20	12	30	11	6	88
		16.1	18.9	12.9	23.0	8.3	8.8	46.1%
		10.2%	22.7%	13.6%	34.1%	12.5%	6.8%	
		25.7%	48.8%	42.9%	60.0%	61.1%	31.6%	
		4.7%	10.5%	6.3%	15.7%	5.8%	3.1%	
2.00		12	13	10	14	3	10	62
		11.4	13.3	9.1	16.2	5.8	6.2	32.5%
		19.4%	21.0%	16.1%	22.6%	4.8%	16.1%	
		34.3%	31.7%	35.7%	28.0%	16.7%	52.6%	
		6.3%	6.8%	5.2%	7.3%	1.6%	5.2%	
3.00		11	5	3	4	2	1	26
		4.8	5.6	3.8	6.8	2.5	2.6	13.6%
		42.3%	19.2%	11.5%	15.4%	7.7%	3.8%	
		31.4%	12.2%	10.7%	8.0%	11.1%	5.3%	
		5.8%	2.6%	1.6%	2.1%	1.0%	.5%	
4.00		3	3	3	2	2	2	15
		2.7	3.2	2.2	3.9	1.4	1.5	7.9%
		20.0%	20.0%	20.0%	13.3%	13.3%	13.3%	
		8.6%	7.3%	10.7%	4.0%	11.1%	10.5%	
		1.6%	1.6%	1.6%	1.0%	1.0%	1.0%	
COLUMN TOTAL		35	41	28	50	18	19	191
		18.3%	21.5%	14.7%	26.2%	9.4%	9.9%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
23.63553	15	0.0715	1.414	10 OF 24 (41.7%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

CROSSTABULATION OF EAT BY INSEASON

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	INSEASON 3	4	5	6	ROW TOTAL
1.00		34	30	15	9	88
		33.2	33.2	11.5	10.1	46.1%
		38.6%	34.1%	17.0%	10.2%	
		47.2%	41.7%	60.0%	40.9%	
		17.8%	15.7%	7.9%	4.7%	
2.00		24	27	6	5	62
		23.4	23.4	8.1	7.1	32.5%
		38.7%	43.5%	9.7%	8.1%	
		33.3%	37.5%	24.0%	22.7%	
		12.6%	14.1%	3.1%	2.6%	
3.00		10	8	2	6	26
		9.8	9.8	3.4	3.0	13.6%
		38.5%	30.8%	7.7%	23.1%	
		13.9%	11.1%	8.0%	27.3%	
		5.2%	4.2%	1.0%	3.1%	
4.00		4	7	2	2	15
		5.7	5.7	2.0	1.7	7.9%
		26.7%	46.7%	13.3%	13.3%	
		5.6%	9.7%	8.0%	9.1%	
		2.1%	3.7%	1.0%	1.0%	
COLUMN TOTAL		72	72	25	22	191
		37.7%	37.7%	13.1%	11.5%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
8.05453	9	0.5287	1.728	4 OF 16 (25.0%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

EAT — CROSSTABULATION OF EAT BY COMPETE

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	COMPETE 1.00	2.00	3.00	ROW TOTAL
1.00		13	45	30	88
		16.1	41.9	29.9	46.1%
		14.8%	51.1%	34.1%	
		37.1%	49.5%	46.2%	
		6.8%	23.6%	15.7%	
2.00		15	27	20	62
		11.4	29.5	21.1	32.5%
		24.2%	43.5%	32.3%	
		42.9%	29.7%	30.8%	
		7.9%	14.1%	10.5%	
3.00		7	9	10	26
		4.8	12.4	8.8	13.6%
		26.9%	34.6%	38.5%	
		20.0%	9.9%	15.4%	
		3.7%	4.7%	5.2%	
4.00		0	10	5	15
		2.7	7.1	5.1	7.9%
		.0%	66.7%	33.3%	
		.0%	11.0%	7.7%	
		.0%	5.2%	2.6%	
COLUMN TOTAL		35	91	65	191
		18.3%	47.6%	34.0%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
8.28757	6	0.2178	2.749	2 OF 12 (16.7%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

CROSSTABULATION OF EAT BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 1	2	3	4	5	6	7	8	9	10	ROW TOTAL
1.00		10	10	2	3	3	7	2	7	13	1	87
		10.5	8.7	1.8	1.4	5.0	10.5	2.3	4.6	11.9	.9	45.8%
		11.5%	11.5%	2.3%	3.4%	3.4%	8.0%	2.3%	8.0%	14.9%	1.1%	
		43.5%	52.6%	50.0%	100.0%	27.3%	30.4%	40.0%	70.0%	50.0%	50.0%	
		5.3%	5.3%	1.1%	1.6%	1.6%	3.7%	1.1%	3.7%	6.8%	.5%	
2.00		7	3	2	0	5	12	3	2	6	0	62
		7.5	6.2	1.3	1.0	3.6	7.5	1.6	3.3	8.5	.7	32.6%
		11.3%	4.8%	3.2%	.0%	8.1%	19.4%	4.8%	3.2%	9.7%	.0%	
		30.4%	15.8%	50.0%	.0%	45.5%	52.2%	60.0%	20.0%	23.1%	.0%	
		3.7%	1.6%	1.1%	.0%	2.6%	6.3%	1.6%	1.1%	3.2%	.0%	
3.00		2	3	0	0	2	3	0	1	5	1	26
		3.1	2.6	.5	.4	1.5	3.1	.7	1.4	3.6	.3	13.7%
		7.7%	11.5%	.0%	.0%	7.7%	11.5%	.0%	3.8%	19.2%	3.8%	
		8.7%	15.8%	.0%	.0%	18.2%	13.0%	.0%	10.0%	19.2%	50.0%	
		1.1%	1.6%	.0%	.0%	1.1%	1.6%	.0%	.5%	2.6%	.5%	
4.00		4	3	0	0	1	1	0	0	2	0	15
		1.8	1.5	.3	.2	.9	1.8	.4	.8	2.1	.2	7.9%
		26.7%	20.0%	.0%	.0%	6.7%	6.7%	.0%	.0%	13.3%	.0%	
		17.4%	15.8%	.0%	.0%	9.1%	4.3%	.0%	.0%	7.7%	.0%	
		2.1%	1.6%	.0%	.0%	.5%	.5%	.0%	.0%	1.1%	.0%	
(CONTINUED)	COLUMN TOTAL	23	19	4	3	11	23	5	10	26	2	190
		12.1%	10.0%	2.1%	1.6%	5.8%	12.1%	2.6%	5.3%	13.7%	1.1%	100.0%

University of Alberta

CROSSTABULATION OF EAT BY UNIV

PAGE 2 OF 3

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 11	12	13	14	16	17	18	19	21	22	ROW TOTAL
1.00		10	1	4	7	1	0	2	1	0	1	87
		7.3	1.4	7.8	4.6	.5	.5	2.7	.5	.5	.5	45.8%
		11.5%	1.1%	4.6%	8.0%	1.1%	.0%	2.3%	1.1%	.0%	1.1%	
		62.5%	33.3%	23.5%	70.0%	100.0%	.0%	33.3%	100.0%	.0%	100.0%	
		5.3%	.5%	2.1%	3.7%	.5%	.0%	1.1%	.5%	.0%	.5%	
2.00		3	2	7	2	0	1	3	0	1	0	62
		5.2	1.0	5.5	3.3	.3	.3	2.0	.3	.3	.3	32.6%
		4.8%	3.2%	11.3%	3.2%	.0%	1.6%	4.8%	.0%	1.6%	.0%	
		18.8%	66.7%	41.2%	20.0%	.0%	100.0%	50.0%	.0%	100.0%	.0%	
		1.6%	1.1%	3.7%	1.1%	.0%	.5%	1.6%	.0%	.5%	.0%	
3.00		2	0	5	0	0	0	1	0	0	0	26
		2.2	.4	2.3	1.4	.1	.1	.8	.1	.1	.1	13.7%
		7.7%	.0%	19.2%	.0%	.0%	.0%	3.8%	.0%	.0%	.0%	
		12.5%	.0%	29.4%	.0%	.0%	.0%	16.7%	.0%	.0%	.0%	
		1.1%	.0%	2.6%	.0%	.0%	.0%	.5%	.0%	.0%	.0%	
4.00		1	0	1	1	0	0	0	0	0	0	15
		1.3	.2	1.3	.8	.1	.1	.5	.1	.1	.1	7.9%
		6.7%	.0%	6.7%	6.7%	.0%	.0%	.0%	.0%	.0%	.0%	
		6.3%	.0%	5.9%	10.0%	.0%	.0%	.0%	.0%	.0%	.0%	
		.5%	.0%	.5%	.5%	.0%	.0%	.0%	.0%	.0%	.0%	
(CONTINUED)	COLUMN TOTAL	16	3	17	10	1	1	6	1	1	1	190
		8.4%	1.6%	8.9%	5.3%	.5%	.5%	3.2%	.5%	.5%	.5%	100.0%

University of Alberta

CROSSTABULATION OF EAT BY UNIV

PAGE 3 OF 3

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 23	24	25	26	ROW TOTAL
1.00		1	1	0	0	87
		.5	.5	.5	1.8	45.8%
		1.1%	1.1%	.0%	.0%	
		100.0%	100.0%	.0%	.0%	
		.5%	.5%	.0%	.0%	
2.00		0	0	0	3	62
		.3	.3	.3	1.3	32.6%
		.0%	.0%	.0%	4.8%	
		.0%	.0%	.0%	75.0%	
		.0%	.0%	.0%	1.6%	
3.00		0	0	0	1	26
		.1	.1	.1	.5	13.7%
		.0%	.0%	.0%	3.8%	
		.0%	.0%	.0%	25.0%	
		.0%	.0%	.0%	.5%	
4.00		0	0	1	0	15
		.1	.1	.1	.3	7.9%
		.0%	.0%	6.7%	.0%	
		.0%	.0%	100.0%	.0%	
		.0%	.0%	.5%	.0%	
COLUMN TOTAL		1 .5%	1 .5%	1 .5%	4 2.1%	190 100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
66.29229	69	0.5701	0.079	83 OF 96 (86.5%)

NUMBER OF MISSING OBSERVATIONS = 2

University of Alberta

GENDER: 1

CROSSTABULATION OF EAT BY SPORT

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	SPORT 1	2	3	4	5	6	ROW TOTAL
1.00		4	5	6	17	3	2	37
		7.8	6.4	6.0	10.0	3.2	3.6	35.6%
		10.8%	13.5%	16.2%	45.9%	8.1%	5.4%	
		18.2%	27.8%	35.3%	60.7%	33.3%	20.0%	
		3.8%	4.8%	5.8%	16.3%	2.9%	1.9%	
2.00		6	8	6	6	2	6	34
		7.2	5.9	5.6	9.2	2.9	3.3	32.7%
		17.6%	23.5%	17.6%	17.6%	5.9%	17.6%	
		27.3%	44.4%	35.3%	21.4%	22.2%	60.0%	
		5.8%	7.7%	5.8%	5.8%	1.9%	5.8%	
3.00		10	3	2	4	2	1	22
		4.7	3.8	3.6	5.9	1.9	2.1	21.2%
		45.5%	13.6%	9.1%	18.2%	9.1%	4.5%	
		45.5%	16.7%	11.8%	14.3%	22.2%	10.0%	
		9.6%	2.9%	1.9%	3.8%	1.9%	1.0%	
4.00		2	2	3	1	2	1	11
		2.3	1.9	1.8	3.0	1.0	1.1	10.6%
		18.2%	18.2%	27.3%	9.1%	18.2%	9.1%	
		9.1%	11.1%	17.6%	3.6%	22.2%	10.0%	
		1.9%	1.9%	2.9%	1.0%	1.9%	1.0%	
COLUMN TOTAL		22	18	17	28	9	10	104
		21.2%	17.3%	16.3%	26.9%	8.7%	9.6%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
24.05891	15	0.0641	0.952	15 OF 24 (62.5%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

GENDER: 1

CROSSTABULATION OF EAT BY INSEASON

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	INSEASON 3	4	5	6	ROW TOTAL
1.00		14	16	5	2	37
		14.2	16.0	3.2	3.6	35.6%
		37.8%	43.2%	13.5%	5.4%	
		35.0%	35.6%	55.6%	20.0%	
		13.5%	15.4%	4.8%	1.9%	
2.00		13	16	2	3	34
		13.1	14.7	2.9	3.3	32.7%
		38.2%	47.1%	5.9%	8.8%	
		32.5%	35.6%	22.2%	30.0%	
		12.5%	15.4%	1.9%	2.9%	
3.00		10	8	1	3	22
		8.5	9.5	1.9	2.1	21.2%
		45.5%	36.4%	4.5%	13.6%	
		25.0%	17.8%	11.1%	30.0%	
		9.6%	7.7%	1.0%	2.9%	
4.00		3	5	1	2	11
		4.2	4.8	1.0	1.1	10.6%
		27.3%	45.5%	9.1%	18.2%	
		7.5%	11.1%	11.1%	20.0%	
		2.9%	4.8%	1.0%	1.9%	
COLUMN TOTAL		40	45	9	10	104
		38.5%	43.3%	8.7%	9.6%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
4.66608	9	0.8624	0.952	10 OF 16 (62.5%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

GENDER: 1

CROSSTABULATION OF EAT BY COMPETE

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	COMPETE 1.00	2.00	3.00	ROW TOTAL
1.00		4	21	12	37
		7.1	17.4	12.5	35.6%
		10.8%	56.8%	32.4%	
		20.0%	42.9%	34.3%	
		3.8%	20.2%	11.5%	
2.00		10	12	12	34
		6.5	16.0	11.4	32.7%
		29.4%	35.3%	35.3%	
		50.0%	24.5%	34.3%	
		9.6%	11.5%	11.5%	
3.00		6	9	7	22
		4.2	10.4	7.4	21.2%
		27.3%	40.9%	31.8%	
		30.0%	18.4%	20.0%	
		5.8%	8.7%	6.7%	
4.00		0	7	4	11
		2.1	5.2	3.7	10.6%
		.0%	63.6%	36.4%	
		.0%	14.3%	11.4%	
		.0%	6.7%	3.8%	
COLUMN TOTAL		20	49	35	104
		19.2%	47.1%	33.7%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
8.69698	6	0.1914	2.115	3 OF 12 (25.0%)

NUMBER OF MISSING OBSERVATIONS = 1

University of Alberta

GENDER: 1

CROSSTABULATION OF EAT BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 1	2	3	5	6	7	8	9	10	11	ROW TOTAL
1.00		5	9	1	2	1	0	3	7	1	1	36
		5.2	6.3	.7	1.4	3.5	.7	1.7	5.2	.3	1.7	35.0%
		13.9%	25.0%	2.8%	5.6%	2.8%	.0%	8.3%	19.4%	2.8%	2.8%	
		33.3%	50.0%	50.0%	50.0%	10.0%	.0%	60.0%	46.7%	100.0%	20.0%	
		4.9%	8.7%	1.0%	1.9%	1.0%	.0%	2.9%	6.8%	1.0%	1.0%	
2.00		5	3	1	0	6	2	1	2	0	2	34
		5.0	5.9	.7	1.3	3.3	.7	1.7	5.0	.3	1.7	33.0%
		14.7%	8.8%	2.9%	.0%	17.6%	5.9%	2.9%	5.9%	.0%	5.9%	
		33.3%	16.7%	50.0%	.0%	60.0%	100.0%	20.0%	13.3%	.0%	40.0%	
		4.9%	2.9%	1.0%	.0%	5.8%	1.9%	1.0%	1.9%	.0%	1.9%	
3.00		2	3	0	1	3	0	1	5	0	1	22
		3.2	3.8	.4	.9	2.1	.4	1.1	3.2	.2	1.1	21.4%
		9.1%	13.6%	.0%	4.5%	13.6%	.0%	4.5%	22.7%	.0%	4.5%	
		13.3%	16.7%	.0%	25.0%	30.0%	.0%	20.0%	33.3%	.0%	20.0%	
		1.9%	2.9%	.0%	1.0%	2.9%	.0%	1.0%	4.9%	.0%	1.0%	
4.00		3	3	0	1	0	0	0	1	0	1	11
		1.6	1.9	.2	.4	1.1	.2	.5	1.6	.1	.5	10.7%
		27.3%	27.3%	.0%	9.1%	.0%	.0%	.0%	9.1%	.0%	9.1%	
		20.0%	16.7%	.0%	25.0%	.0%	.0%	.0%	6.7%	.0%	20.0%	
		2.9%	2.9%	.0%	1.0%	.0%	.0%	.0%	1.0%	.0%	1.0%	
(CONTINUED)	COLUMN TOTAL	15	18	2	4	10	2	5	15	1	5	103
		14.6%	17.5%	1.9%	3.9%	9.7%	1.9%	4.9%	14.6%	1.0%	4.9%	100.0%

University of Alberta

GENDER: 1

EAT — CROSSTABULATION OF — BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 12	13	14	16	18	24	25	26	ROW TOTAL
1.00		0	3	1	1	0	1	0	0	36
		.3	4.9	.3	.3	1.0	.3	.3	1.4	35.0%
		.0%	8.3%	2.8%	2.8%	.0%	2.8%	.0%	.0%	
		.0%	21.4%	100.0%	100.0%	.0%	100.0%	.0%	.0%	
		.0%	2.9%	1.0%	1.0%	.0%	1.0%	.0%	.0%	
2.00		1	6	0	0	2	0	0	3	34
		.3	4.6	.3	.3	1.0	.3	.3	1.3	33.0%
		2.9%	17.6%	.0%	.0%	5.9%	.0%	.0%	8.8%	
		100.0%	42.9%	.0%	.0%	66.7%	.0%	.0%	75.0%	
		1.0%	5.8%	.0%	.0%	1.9%	.0%	.0%	2.9%	
3.00		0	4	0	0	1	0	0	1	22
		.2	3.0	.2	.2	.6	.2	.2	.9	21.4%
		.0%	18.2%	.0%	.0%	4.5%	.0%	.0%	4.5%	
		.0%	28.6%	.0%	.0%	33.3%	.0%	.0%	25.0%	
		.0%	3.9%	.0%	.0%	1.0%	.0%	.0%	1.0%	
4.00		0	1	0	0	0	0	1	0	11
		.1	1.5	.1	.1	.3	.1	.1	.4	10.7%
		.0%	9.1%	.0%	.0%	.0%	.0%	9.1%	.0%	
		.0%	7.1%	.0%	.0%	.0%	.0%	100.0%	.0%	
		.0%	1.0%	.0%	.0%	.0%	.0%	1.0%	.0%	
COLUMN TOTAL		1	14	1	1	3	1	1	4	103
		1.0%	13.6%	1.0%	1.0%	2.9%	1.0%	1.0%	3.9%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
50.02994	51	0.5122	0.107	68 OF 72 (94.4%)

NUMBER OF MISSING OBSERVATIONS = 2

University of Alberta

GENDER: 2

CROSSTABULATION OF EAT BY SPORT

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	SPORT 1	2	3	4	5	6	ROW TOTAL
1.00		5	15	6	13	8	4	51
		7.6	13.5	6.4	12.9	5.3	5.3	58.6%
		9.8%	29.4%	11.8%	25.5%	15.7%	7.8%	
		38.5%	65.2%	54.5%	59.1%	88.9%	44.4%	
		5.7%	17.2%	6.9%	14.9%	9.2%	4.6%	
2.00		6	5	4	8	1	4	28
		4.2	7.4	3.5	7.1	2.9	2.9	32.2%
		21.4%	17.9%	14.3%	28.6%	3.6%	14.3%	
		46.2%	21.7%	36.4%	36.4%	11.1%	44.4%	
		6.9%	5.7%	4.6%	9.2%	1.1%	4.6%	
3.00		1	2	1	0	0	0	4
		.6	1.1	.5	1.0	.4	.4	4.6%
		25.0%	50.0%	25.0%	.0%	.0%	.0%	
		7.7%	8.7%	9.1%	.0%	.0%	.0%	
		1.1%	2.3%	1.1%	.0%	.0%	.0%	
4.00		1	1	0	1	0	1	4
		.6	1.1	.5	1.0	.4	.4	4.6%
		25.0%	25.0%	.0%	25.0%	.0%	25.0%	
		7.7%	4.3%	.0%	4.5%	.0%	11.1%	
		1.1%	1.1%	.0%	1.1%	.0%	1.1%	
COLUMN TOTAL		13	23	11	22	9	9	87
		14.9%	26.4%	12.6%	25.3%	10.3%	10.3%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
11.68529	15	0.7027	0.414	16 OF 24 (66.7%)

NUMBER OF MISSING OBSERVATIONS = 0

University of Alberta

GENDER: 2

CROSSTABULATION OF EAT BY INSEASON

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	INSEASON 3	4	5	6	ROW TOTAL
1.00		20	14	10	7	51
		18.8	15.8	9.4	7.0	58.6%
		39.2%	27.5%	19.6%	13.7%	
		62.5%	51.9%	62.5%	58.3%	
		23.0%	16.1%	11.5%	8.0%	
2.00		11	11	4	2	28
		10.3	8.7	5.1	3.9	32.2%
		39.3%	39.3%	14.3%	7.1%	
		34.4%	40.7%	25.0%	16.7%	
		12.6%	12.6%	4.6%	2.3%	
3.00		0	0	1	3	4
		1.5	1.2	.7	.6	4.6%
		.0%	.0%	25.0%	75.0%	
		.0%	.0%	6.3%	25.0%	
		.0%	.0%	1.1%	3.4%	
4.00		1	2	1	0	4
		1.5	1.2	.7	.6	4.6%
		25.0%	50.0%	25.0%	.0%	
		3.1%	7.4%	6.3%	.0%	
		1.1%	2.3%	1.1%	.0%	
COLUMN TOTAL		32	27	16	12	87
		36.8%	31.0%	18.4%	13.8%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
17.08392	9	0.0474	0.552	9 OF 16 (56.3%)

NUMBER OF MISSING OBSERVATIONS = 0

University of Alberta

GENDER: 2

CROSSTABULATION OF EAT BY COMPETE

PAGE 1 OF 1

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	COMPETE 1.00	2.00	3.00	ROW TOTAL
1.00		9	24	18	51
		8.8	24.6	17.6	58.6%
		17.6%	47.1%	35.3%	
		60.0%	57.1%	60.0%	
		10.3%	27.6%	20.7%	
2.00		5	15	8	28
		4.8	13.5	9.7	32.2%
		17.9%	53.6%	28.6%	
		33.3%	35.7%	26.7%	
		5.7%	17.2%	9.2%	
3.00		1	0	3	4
		.7	1.9	1.4	4.6%
		25.0%	.0%	75.0%	
		6.7%	.0%	10.0%	
		1.1%	.0%	3.4%	
4.00		0	3	1	4
		.7	1.9	1.4	4.6%
		.0%	75.0%	25.0%	
		.0%	7.1%	3.3%	
		.0%	3.4%	1.1%	
COLUMN TOTAL		15	42	30	87
		17.2%	48.3%	34.5%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
5.84352	6	0.4409	0.690	7 OF 12 (58.3%)

NUMBER OF MISSING OBSERVATIONS = 0

University of Alberta

GENDER: 2

EAT — CROSSTABULATION OF — BY UNIV

PAGE 1 OF 2

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 1	2	3	4	5	6	7	8	9	10	ROW TOTAL
1.00		5 4.7 9.8% 62.5% 5.7%	1 .6 2.0% 100.0% 1.1%	1 1.2 2.0% 50.0% 1.1%	3 1.8 5.9% 100.0% 3.4%	1 4.1 2.0% 14.3% 1.1%	6 7.6 11.8% 46.2% 6.9%	2 1.8 3.9% 66.7% 2.3%	4 2.9 7.8% 80.0% 4.6%	6 6.4 11.8% 54.5% 6.9%	0 .6 .0% .0% .0%	51 58.6%
2.00		2 2.6 7.1% 25.0% 2.3%	0 .3 .0% .0% .0%	1 .6 3.6% 50.0% 1.1%	0 1.0 .0% .0% .0%	5 2.3 17.9% 71.4% 5.7%	6 4.2 21.4% 46.2% 6.9%	1 1.0 3.6% 33.3% 1.1%	1 1.6 3.6% 20.0% 1.1%	4 3.5 14.3% 36.4% 4.6%	0 .3 .0% .0% .0%	28 32.2%
3.00		0 .4 .0% .0% .0%	0 .0 .0% .0% .0%	0 .1 .0% .0% .0%	0 .1 .0% .0% .0%	1 .3 25.0% 14.3% 1.1%	0 .6 .0% .0% .0%	0 .1 .0% .0% .0%	0 .2 .0% .0% .0%	0 .5 .0% .0% .0%	1 0 25.0% 100.0% 1.1%	4 4.6%
4.00		1 .4 25.0% 12.5% 1.1%	0 .0 .0% .0% .0%	0 .1 .0% .0% .0%	0 .1 .0% .0% .0%	0 .3 .0% .0% .0%	1 .6 25.0% 7.7% 1.1%	0 .1 .0% .0% .0%	0 .2 .0% .0% .0%	1 .5 25.0% 9.1% 1.1%	0 .0 .0% .0% .0%	4 4.6%
(CONTINUED)	COLUMN TOTAL	8 9.2%	1 1.1%	2 2.3%	3 3.4%	7 8.0%	13 14.9%	3 3.4%	5 5.7%	11 12.6%	1 1.1%	87 100.0%

University of Alberta

GENDER: 2

CROSSTABULATION OF EAT BY UNIV

EAT	COUNT / EXP VAL / ROW PCT / COL PCT / TOT PCT	UNIV 11	12	13	14	17	18	19	21	22	23	ROW TOTAL
1.00		9	1	1	6	0	2	1	0	1	1	51
		6.4	1.2	1.8	5.3	.6	1.8	.6	.6	.6	.6	58.6%
		17.6%	2.0%	2.0%	11.8%	.0%	3.9%	2.0%	.0%	2.0%	2.0%	
		81.8%	50.0%	33.3%	66.7%	.0%	66.7%	100.0%	.0%	100.0%	100.0%	
		10.3%	1.1%	1.1%	6.9%	.0%	2.3%	1.1%	.0%	1.1%	1.1%	
2.00		1	1	1	2	1	1	0	1	0	0	28
		3.5	.6	1.0	2.9	.3	1.0	.3	.3	.3	.3	32.2%
		3.6%	3.6%	3.6%	7.1%	3.6%	3.6%	.0%	3.6%	.0%	.0%	
		9.1%	50.0%	33.3%	22.2%	100.0%	33.3%	.0%	100.0%	.0%	.0%	
		1.1%	1.1%	1.1%	2.3%	1.1%	1.1%	.0%	1.1%	.0%	.0%	
3.00		1	0	1	0	0	0	0	0	0	0	4
		.5	.1	.1	.4	.0	.1	.0	.0	.0	.0	4.6%
		25.0%	.0%	25.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	
		9.1%	.0%	33.3%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	
		1.1%	.0%	1.1%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	
4.00		0	0	0	1	0	0	0	0	0	0	4
		.5	.1	.1	.4	.0	.1	.0	.0	.0	.0	4.6%
		.0%	.0%	.0%	25.0%	.0%	.0%	.0%	.0%	.0%	.0%	
		.0%	.0%	.0%	11.1%	.0%	.0%	.0%	.0%	.0%	.0%	
		.0%	.0%	.0%	1.1%	.0%	.0%	.0%	.0%	.0%	.0%	
COLUMN TOTAL		11	2	3	9	1	3	1	1	1	1	87
		12.6%	2.3%	3.4%	10.3%	1.1%	3.4%	1.1%	1.1%	1.1%	1.1%	100.0%

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
55.84799	57	0.5184	0.046	76 OF 80 (95.0%)

NUMBER OF MISSING OBSERVATIONS = 0

University of Alberta